

THE
RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer • TRANSPORT • The Railway News
The Railway Times • Herapaths
Railway Journal • RAILWAY RECORD.
RAILWAYS • ESTABLISHED 1835 • THE RAILWAY OFFICIAL GAZETTE
ILLUSTRATED

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1
Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (8 lines)
Annual subscription payable in advance and postage free
British Isles and Abroad £2 5s. 0d.
Single Copies One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 82 No. 21 FRIDAY, MAY 25, 1945

CONTENTS

	PAGE
Editorial Notes	509
Qualifications for Public Relations Work	511
Government of India Industrial Policy	511
Expenditure on Maintenance and Repairs	512
A Railway Operating Analogy	512
Training for Transport	512
Load-Compensating Freight Brakes	513
Letters to the Editor	514
The Scrap Heap	515
Overseas Railway Affairs	516
Ventilation and Cooling of the London Tube Railways	517
Electric Traction Section	520
British Locomotives for North-West Europe	522
Personal	523
Transport Services and the War	525

DIESEL RAILWAY TRACTION SUPPLEMENT

The June issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, will be ready on June 1, price 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted.

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 a.m. till 5.30 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

"Encouraging Traffic"

THE lack of understanding of present-day affairs which sometimes is made evident by those members of the Civil Service who at present direct so much of human activity, is beyond the comprehension of lesser, if more practical, mortals. An instance of the kind of thing we have in mind is the reluctance to permit any publicity to be given in advance to such additional trains as the railways are now permitted to run. Because of the abnormal demands on passenger train services, the Ministry of War Transport does not object—indeed, if it would avoid chaos, it cannot object—to the running of duplicate services and additional trains.

On the other hand, it is reluctant for such trains to be shown in the published timetables or for public attention to be drawn to the provision of these facilities. Consequently it has ruled that these relief trains can be run only when the number of people presenting themselves at a station cannot be accommodated in the booked services.

It should be obvious to anyone that additional trains cannot be run at a moment's notice. Either the companies must have the stock formed up, with train crews and engine available well in advance of the time they are likely to be required, or the crowds of passengers must be kept waiting for an appreciable time while the necessary steps are taken to obtain the stock, form the train, and work it to the station.

The basis of the Ministry's objection apparently is that if passengers knew in advance that additional trains were to be run at stated times to particular resorts, it would "encourage public travel." In fact, of course, public travel for holiday purposes is not a matter which is embarked on lightly: the mere obtaining of accommodation at a holiday resort in these days is usually a matter of considerable difficulty, involving pre-booking over many weeks, if not months.

If passengers knew well in advance the times of relief trains which would be run, they would obviously time their arrival at the stations at a reasonable period in advance, instead of all bunching together very early in the day in an endeavour to be first in the queue for the available seats on the booked services. Congestion at the stations and inconvenience to passengers would be appreciably minimised. We hope that the Ministry will waive this ruling before the summer holiday rush begins and leave the matter to the judgment of the experienced railway officials.

A further and even more surprising example of Ministry control is the fact that the chief executives of a main-line railway company are not permitted to authorise the running of an additional trip by even a local train, to meet a request for a late return service by the organisers of children's outings, musical festivals, sports meetings and similar functions, even though the rolling stock and staff are available, without first obtaining the approval of the Ministry of War Transport through the medium of the Railway Executive Committee. It is necessary, of course, that any such additional facility should not impede the movement of essential traffic, but after 5½ years of war the railway managements are fully alive to their obligations in this respect. Indeed, it would be interesting to know on what grounds the Ministry could decline to approve any such requests put forward by the companies!

Locomotive Export Orders

The greater part of the locomotive building capacity of this country is still subject to what may be described as operational requirements, and the industry continues to be engaged on "approved" work, although most of that work is under direct contracts with the overseas railways concerned. There can be no doubt that export demands will be large, and it is becoming possible gradually for builders to accept ordinary export orders. The North British Locomotive Co. Ltd., which is engaged on the completion of 150 locomotives and tenders for the Government War Department, has received orders from India for 110 8-coupled locomotives and tenders, and for 60 locomotives and tenders for South African railways. The Vulcan Foundry Limited, in addition to completing W.D. orders, has an important Indian contract to complete during the present year, and will be delivering "Liberation" locomotives specially designed for Continental countries. Beyer, Peacock & Co. Ltd. has a mixed bag of South African locomotives and "operational" locomotives in its programme. Indeed, all the British locomotive firms are working at top pressure on essential locomotive productions, largely for export. A good many inquiries for locomotives in various parts of the world are known to be circulating. In addition, as Mr. Woodbine Parish, Chairman of the Vulcan Foundry Limited, told

shareholders at the annual meeting recently, the British railways are seeking capacity from the industry to build engines over the next five years. In all cases it can be stated that orders, or firm inquiries readily capable of being resolved into orders, will keep the industry fully employed not only during the current financial year, but throughout 1946.

Railways After the War

With the end of the war in Europe, conjecture increases as to the probabilities of the restoration of private ownership of the railway companies, and Mr. H. M. Collings, London City Manager of the L.N.E.R., who recently addressed the Industrial Transport Association, was not able to give his hearers much guidance on this point, although he explained some of the problems which will have to be faced in returning to a more normal form of railway operation. He pointed out that the majority, if not all, of the 1,439 Statutory Rules & Orders, imposed by Parliament during the war in respect of the railways, will require to be revoked. Irrespective of whether or not control was continued, he made a special plea that there should be no such fierce competition from road transport as there was after the last war. He made some suggestions to traders as to means by which they could co-operate to improve transport conditions. If users of transport would make known their requirements and explain frankly their difficulties, it would be possible to seek ways and means which would tend to be of mutual advantage.

Overseas Railway Traffics

Interest in the securities of British-owned railways in Argentina has been flagging recently and does not show at present much sign of revival, although there has been a slight improvement in some debenture issues. As will be seen from the accompanying table, the traffics of the Buenos Ayres & Pacific and the Buenos Ayres Great Southern for the 45th week of the financial year are satisfactory and the Buenos Ayres Western has a small increase. On the Central Argentine there have been decreases of some importance in the past four weeks, but these contrast with far more substantial improvements in the corresponding weeks of 1944 over those of the previous year. The Entre Rios increase for the week is £6,806. For the first 19 weeks of 1945 the aggregate receipts of the Antofagasta amount to £571,230, an advance of £39,270. Among Brazilian railways the receipts of the Great Western for the 19th week show no change and the aggregate of £500,800 to date is £64,500 higher. With an increase of £2,471 for the week the decrease in the aggregate traffic of the Leopoldina has been reduced to £2,857. Publication of the weekly gross receipts of the San Paulo Railway was discontinued in February, 1944, on the ground that they might be misleading in view of the increase in costs.

	No. of week	Weekly traffics £	Inc. or dec. £	Aggregate traffic £	Inc. or dec. £
Buenos Ayres & Pacific*	45th	145,000	+10,938	6,189,000	+1,048,625
Buenos Ayres Great Southern*	45th	183,312	+27,250	9,447,375	+979,687
Buenos Ayres Western*	45th	63,062	+500	3,172,875	+487,687
Central Argentine*	45th	172,465	-6,441	8,130,931	+848,731
Canadian Pacific	18th	1,199,000	+44,000	21,205,400	-69,400

* Pesos converted at 16 to £

Since the 30th week of the current financial year the United Railways of the Havana have changed an aggregate increase of £2,993 into an aggregate decrease of £185,912, due mainly to adverse climatic conditions.

Outer Suburban Stops of Long Distance Trains

A feature of the L.M.S.R. summer train service, which came into operation on May 7, was the withdrawal from express schedules, on the Western Division main line, of a number of the stops made hitherto at Watford. In earlier London & North Western days it was a regular practice for long-distance expresses to call at Willesden Junction, in the down direction, to pick up north-west London residents; and in the up direction the Willesden stop was enforced for ticket-collecting purposes. As corridor trains came into service, however, the travelling ticket collector also made his appearance; from then on the Willesden stops were almost entirely withdrawn. In the second winter of the recent European war, the air attacks on London, and the danger and delay so caused to trains, made it desirable to give passengers the opportunity of joining or leaving the trains, if they so desired, well outside the London area, and Watford naturally suggested itself as the most suitable stopping point, for it is the terminal point of the electric service, and also has direct bus communication with large areas of north and north-west London. From that time onwards a number of down expresses and the great majority of the up long-distance trains were booked to call at Watford. With the end of the European war the necessity for this stop has

lessened, though the number of passengers making use of it is still considerable. Three successive L.M.S.R. timetable issues have now withdrawn practically all the Watford stops of down long-distance trains, save the early morning group (8.15, 8.30 and 8.40 a.m. from Euston), but a certain proportion of those in the up direction still remain, and it is to be hoped that this great convenience to north-west London residents may still be retained.

Ventilating London Tube Railways

Changes for the better often go unnoticed until something calls attention to them. Perhaps we are unobservant and we confess that it was not until we had read the MS. of Mr. S. C. Mount's most interesting article commencing on p. 517 of this issue that we recalled the smell of vitiated air which years ago exuded from the entrances to the older tube stations. That drawback to tube travel has long since disappeared. At first it was the usual practice to supply fresh air to the tubes direct by fans. The first fan to be installed in the Central London tube set out to draw air from the Bank and discharged it at Wood Lane; the entries and exits at intermediate points were closed as securely as possible during non-traffic hours. The present system is to run fans to exhaust the warmed air through exit shafts. Fresh air to feed the fans arrives with the passenger at the station entrances and proceeds with him down the escalators. Today there are more than 100 miles of tube railways on the London Transport system with some 80 stations. The annual operating and maintenance cost for the system may be £350 to £400 a station for the supply of nearly 50,000 cu. ft. of fresh air a minute for each station interval.

Cooling London Tube Railways

In the early days of the London tube railways, which were relatively lightly loaded, it was found possible to rely mainly on the movement of trains to evacuate warmed air and to introduce fresh air, but the introduction of heavier rolling stock (requiring increased electrical energy for propulsion) and intensification of the train services necessitated the introduction of mechanical means to dissipate heat. The position was that the enormous belt of clay surrounding the tubes became stored to capacity with the heat generated in course of time, and, in fact, it was often said that the generating stations concerned expended much of their energy heating the London subsoil. Without mechanical dissipation of the heat, the temperature of the tubes would eventually have reached uncomfortable limits, resulting in a serious situation. The problem had been examined in some detail by the old underground group of companies, and, when London Transport took over, it had available data upon which to tackle the problem on a large scale. By 1938 it may be said that the problem had been solved, but the results were offset shortly afterwards by the restriction of fan capacity because of A.R.P. works and the admission of shelters to stations, and the combined adverse effect resulted in a notable rise in temperature in the early part of the war. More recently the position has improved steadily. Nevertheless, the London Passenger Transport Board is not satisfied with the present position, and many schemes are under consideration for the improvement of the comfort conditions.

Diesel Enterprise in the U.S.A.

At the end of 1944, for the first time since diesel-electric power was introduced on American railways, the aggregate horse-power of the diesel locomotives in use on long-distance United States passenger and freight service outstripped that used for shunting, marshalling, and transfer work. The chief reason for the increase in "road" diesel power is the popularity of the quadruple-unit 5,400-b.h.p. freight locomotives, of which 202 are now at work, equivalent to 808 single units, with a total b.h.p. of 1,090,800. Of these 191 are classified as freight locomotives exclusively, and 11 as adapted to both freight and passenger operation. No fewer than 124 of these powerful locomotives were put into service in the year 1944. Next in order of popularity are the 2,000-b.h.p. single-unit passenger diesels, which can be worked as multiple-units in pairs of 4,000 b.h.p. or triplets of 6,000 b.h.p.; of these 220 are at work, most of which are classified as "mixed traffic" locomotives, for passenger or freight service. The total number of "road" diesels at the end of 1944 was 505 (or 1,131, if reduced to single units), of an aggregate b.h.p. of 1,668,240; the total number of diesel shunters at the same date was 2,010, with an aggregate b.h.p. of 1,610,440. The 3,141 units concerned have been supplied to Class 1 railways only; if Class 2 and Class 3 railways be included, with the terminal and "switching" companies, the total is increased to 3,525 units, and the aggregate b.h.p. to 3,547,520. In view of the relatively short time that diesel power has been in use, this is an astonishing record.

Qualifications for Public Relations Work

THE increasing ambit of the public relations officer both in the sphere of the Government Department and of the larger industrial undertaking, has been a marked feature in recent years. This tendency has not been confined to this country—indeed it has been more marked in the United States—but in general it is true to say that with the growth of large-scale enterprise, whether private or governmental, the function of usefulness of the public relations officer has grown. In Great Britain the four main-line railways and the London Passenger Transport Board for long have had important departments devoted to the needs of supplying the press and the public with information as to their activities. If it is true, as some critics would hold, that these departments have displayed a greater activity in meeting the demands of the general public than those sections more particularly interested in technical development, it may be said, in extenuation, that the wider rather than the particular need has been met.

In the United States public relations work has a longer history and a greater importance than in this country. Our American contemporary, the *Railway Age*, recently has published some correspondence from public relations officers which merits attention. One of them points out that one of the greatest handicaps which public relations men in that country are labouring under is the widespread and deep-seated impression that public relations work consists almost entirely of press agents. It adds that the naive implication that railway work is so simple that a newspaper man could pick up all its essentials in a short time, will certainly not be accepted by the experienced railwayman, and in this there will be a wide measure of agreement by those who have been engaged in railway public relations work in this country. He also points to what in his judgment is a grievous error, namely, the view that newspaper publicity and public relations are synonymous. It is all too often overlooked that constructive publicity and advertising, although having a very proper place in any public relations programme, are only a part of the work involved, and it is very true that in all organisations what is done and the manner in which it is done more often will form the basis of the judgment of the public than what is said.

In this country public relations work, as applied to Government departments, recently has been the subject of a broadsheet* issued by P.E.P. This publication points out that the staff of the public relations branches at the end of January, 1944, totalled 4,396. Of these, 2,719 were on the staff of the Ministry of Information, and the Service Departments accounted for 1,016. These left a total of 661 for the Civil Ministries, apart from the Ministry of Information. Some statistics given in our February 9 issue based on a reply given in the House of Commons by the Financial Secretary to the Treasury, showed a total whole-time public relations staff of Government Departments, excluding the Ministry of Information, of 1,187, with an approximate annual cost of £572,151.

P.E.P. believes that it can be taken that the important departments of State after the war will possess public relations or public information sections, and the type of work which these will undertake can be divided into four broad categories: (a) publicity which was already being carried on before the war, (b) information about new post-war measures and policies, (c) background information about fundamental political and economic problems, and (d) information given by certain departments which have been established, but may not long survive the war. It recommends that the term "public relations" should be abolished and "information" substituted. Outside Government services it is contended it is now accepted as fundamental that information and public relations work must be treated as an essential function of higher management and closely attached to it. Wartime measures in the Government services have shown that in many instances the same point has been appreciated.

One point made in the broadsheet is important, and deserves close study. It is that a function so closely associated with higher administration can be performed only by an official able to work closely with the heads of his departments and enjoying reasonable access to his Ministers. The same thing might well be said of a public relations officer in an industrial undertaking. If he is out of touch with the highest policy of his undertaking, it is apparent that the public relations officer cannot give of his best or fulfil completely his function, and his value in promulgating the policy of improving public relations with his organisation in general will be in inverse ratio to his distance down the scale from the highest administrative positions.

The growing influence of public relations work is not without its dangers from the viewpoint of the public. Carried to excess, it is clear that a Government public relations system could degenerate into an organ of propaganda administered by the State, and that by canalising information and making more difficult the ascertainment of independent relative fact, it could place great power in the hands of an unscrupulous Government.

Government of India Industrial Policy

THE Government of India has issued, in the form of a press communiqué, a declaration of its post-war industrial policy. Unless it is intended to impress the general public in America and other foreign countries, the reason for this lengthy statement is not obvious. The policy is to encourage and promote the rapid industrialisation of the sub-continent with the object of increasing "the national wealth by a maximum utilisation of the country's resources in men and material, the better preparation of the country for defence, and the provision of a high and stable level of employment"—most laudable aspirations. The secret of the success of this policy is, however, stated to be the taking of "positive measures such as Government participation in the industrial field, where this is required with industry." The meaning of this wording is not over clear, and, although it reads like the nationalisation of industry, subsequent statements might be taken to contradict this interpretation.

At any rate, claims for the assistance or protection of new wartime industries that have proved successful are to be investigated, while a post-war tariff policy is being formulated. The Central Government also proposes "to take over . . . the development of certain important industries as a central subject," including "iron and steel, the manufacture of prime movers, automobiles, tractors, and aircraft, shipbuilding and marine engineering, manufacture of electrical and heavy machinery and machine tools, chemical, textiles, cement, power alcohol, and electric power industries." Moreover, it is admitted that other less-important industries "may be nationalised," if adequate private capital is not forthcoming. Coal, however, is to be examined and dealt with separately, as is also the question of whether existing privately-owned units should be taken over by the State.

Shipbuilding and also the manufacture of locomotives and boilers may be conducted by the State as well as by private capitalists. "While, normally, State enterprise will be managed by the Government itself, the possibility of management through private agency for limited periods, or operation through public corporations, has been indicated, and the Government's intention is to gain experience of management through such corporations." Here again the real intention behind the phraseology of this last sentence is somewhat obscure, but it reads as if private concerns and corporations were to be sucked dry of their administrative experience and then acquired by the State.

To assist industry, "the Government have decided to discharge their responsibilities for laying the foundation of industrial progress by the co-ordinated development of transport and electric power, an efficient survey of mineral resources, the promotion of scientific and industrial research, and higher technical education. In addition, they propose to take part, either by making loans or by subscribing a share of capital, in industrial undertakings important to the country's development, but for which adequate private capital may not be forthcoming. Industries receiving this type of assistance will naturally be subject to a greater degree of control than others, for example, through Government representation on a board of management. In special cases, industrial enterprises will be encouraged by guarantee of a minimum dividend on capital, or an undertaking to meet revenue losses for a fixed number of years, subject to the Government's having a voice in the management and fixation of a ceiling for return of capital." This is probably the soundest decision reported in the statement and one we can wholeheartedly welcome, always provided that too-arbitrary powers in its participation in and control over private enterprise are not enforced by the Government. A pronouncement that the State will financially support research set up by industries is also good news, as are its intentions (a) to insure that taxation shall not handicap industrial development, and (b) to procure capital goods required by industry.

The most suitable geographical distribution of industry is to be considered, and a board is to be set up to advise the Central Government upon the licensing of new factories and the expansion of existing ones, which, by law, will be necessary in future.

* "Government Information Services" broadsheet issued by P.E.P. (Political and Economic Planning), No. 230, 16, Queen Anne's Gate, London, S.W.1. Price 1s. 6d.

The wages and social conditions of industrial workers are to be safeguarded by Government controls, which will also put a curb on excess profits and on "unhealthy concentration of assets in the hands of a few persons or a special community." These ends are to be secured by labour and other legislation, the proposed licensing machinery, and a Capital Issues Control, respectively. The ambiguity of the communiqué in certain respects has already made it necessary for the Planning Member of the Government to endeavour to clear up the misunderstanding caused by its publication. He declares that "central control does not mean that all these industries (mentioned above) are to be nationalised in the sense that the Government are to own and run them"; one wonders whether the word "all" should not be italicised. Since the text above was drafted, a third and even more voluminous communiqué has been received; it was issued within two days of the first. This appears to add little to the latter except in wordiness, and is in part similar, word for word. It does, however, add a few more industries to the list previously given, and states that "when the necessary legislation is passed by the Centre, the Government of India will have direct constitutional authority for shaping the progress of a number of industries of vital importance to the country's development."

Expenditure on Maintenance and Repairs

LAST week the L.M.S.R. issued a statement indicating that to deal with the greatly increased traffics the company had to incur expenditure totalling £94,413,000 out of its own funds on maintenance and repairs to permanent way and works and on rolling stock during the years 1940 to 1944. Of this vast sum, £39,733,000 was expended on the permanent way and works, £32,378,000 on locomotives, £7,998,000 on carriages and £14,304,000 on wagons. These are very impressive figures but one national newspaper drew the conclusion that they provide a striking corrective of any impression there might be that the greatly increased traffics of the last five years have been carried at the capital or revenue expense of the Government and not of the railways themselves, because only the minimum attention has been paid to maintenance and repairs. This, we suggest, is somewhat faulty reasoning, and the L.M.S.R. statement that it have expended £94,413,000 on maintenance during the five years out of its own funds is open to misconstruction.

As we have previously explained, the railway control agreement provides that all items of maintenance are to be charged against the control account on the basis of the average amounts expended in the years 1935, 1936, and 1937, with adjustments for variations in assets, plus the estimated increased cost of carrying out the work. The figure is cumulative and, in effect, the current expenditure, which is charged against the control account, is converted into terms of prices in the base period and the difference between that and the expenditure in the base period, with an addition for the current increase in prices, is chargeable as arrears of maintenance to the control account. The addition for increased prices is reviewed regularly, so that the accumulated arrears at any date represent base period prices plus increased cost.

When the expenditure on maintenance, after adjustment for price levels, is less than the base period figure adjusted for price levels, the unexpended balance has to be paid into the trust funds. These unexpended balances or arrears of maintenance are paid monthly into trust funds in the names of the Government and the respective railway companies and, as the arrears are overtaken, the expenditure is met out of the trust funds. With base period maintenance charges representing £50 million, and on the assumption that prices since then have risen by, say, 50 per cent., £75 million would be the current amount chargeable to the control account for maintaining the railways, ignoring the factor of abnormal wear and tear of the undertakings which can be evaluated only at the end of control. The trust funds for the four main-line railway companies and the L.P.T.B. at December 31, 1944, amounted to £125,760,000, of which the L.M.S.R. proportion was £29,654,000. The whole of this sum apart from accrued interest was paid in by the controlled undertakings from their pooled receipts and, similarly, the maintenance carried out by them during the war years has been paid for out of the pooled receipts. Although it is correct, therefore, that the L.M.S.R. has expended over £94 millions on maintenance during the war, we suggest it would be more accurate to say that this sum has been paid out of the pooled receipts of the controlled undertakings against which, of course, the L.M.S.R., in common with the other main-line companies and the London Passenger Transport Board, are entitled to charge their maintenance expenditure. Whichever phrase is used, however, it is quite clear that the maintenance expenditure up to the limits mentioned above of the L.M.S.R. or other con-

trolled undertakings has certainly not been subsidised by the Government during the war.

Training for Transport

IT is appreciated that training for all branches of industry must play an increasingly important part in post-war planning and reconstruction. Reference to what has been done, and is now being done, in respect of the training of railway staffs for transport work, was made in a paper* read recently in London by Mr. J. A. R. Turner, A.M.Inst.T., of the Chief Civil Engineer's Office, Southern Railway.

A good example of what the railways are doing in respect of staff training is provided by the school opened at East Croydon by the Southern Railway (L.B. & S.C.R.) just before the outbreak of the 1914-1918 War. The training school has now been transferred to Clapham Junction and instruction is provided in station working and accounting, elementary station accounting, signalling and double line working, operating and single line working, cartage operation and Road Traffic Acts, and motor vehicle maintenance and operation. Students are encouraged to attend by the issue of travel facilities, the duplication of lectures to cover staff engaged on late and early shifts, and the recording of successful results on their staff records. The practical training of booking clerks at these schools is of more recent origin, that on the Southern Railway commencing in 1938. Since the outbreak of hostilities, the large influx of untrained staff, who have taken the place of men called to the Colours, has led to a great expansion in the facilities provided in this direction. In most instances the courses last for four weeks.

Early in 1944 the L.N.E.R. opened an "All line" Operating School at Darlington, and under wartime conditions the curriculum consists of an intensive and specified course of four weeks' duration in control work and other aspects of railway operating. Other training schools, developed in wartime for clerical staff exist on the L.N.E.R. system at Scarborough, Harrogate, and Witely Bay.

The L.M.S.R. built its own School of Transport at Osmaston Park, Derby, which was opened in July, 1938. The school was established for the quicker and better training of L.M.S.R. staff, especially those attached to the operating and commercial departments. It is an instructional centre where training can be given in the best practices known to the railway industry. The fundamental idea is that the men shall be trained at a resident staff college, rather than at what might be termed a day college, at which those of various grades and from various areas will work and have their recreation together.

With regard to technical education, in 1928, on the Southern Railway, facilities were introduced for the first time for the permanent-way men. This was a very big step forward, as previously practical experience was all that was considered necessary in connection with track maintenance and renewal. The increase in weight, frequency and speed of trains, demanded that the standard of track maintenance should correspondingly progress, and this was certainly facilitated by the increase of knowledge of those working on the track. During the 1938-1939 session all classes held throughout the Southern Railway system were very well attended.

All the railway companies have, at some time or another, introduced classes and lectures for their permanent-way and building staffs, but the matter was taken one stage further in 1944, when agreement was reached between the various companies on a common syllabus for each course, namely, elementary and advanced. At the end of each session, an examination is held and the results of this are recorded on a man's staff record card. A pass in these examinations entitles him to receive the appropriate diploma of the Permanent Way Institution.

With the development of road motor operation, as applied to railway requirements, it was considered that a more intensive system of education was required. The Southern Railway, as previously mentioned, held classes in motor operation at the Training School at Clapham Junction. In 1935 the L.M.S.R. established an experimental school at Lawley Street, Birmingham, which was followed by regional schools at Watford, Birmingham (Sutton Park), Oldham, and Cleckheaton. Some companies have considered it advisable to inaugurate special schools for motor drivers.

Among the educational facilities provided by the L.N.E.R. before the war, were classes for signal maintenance staff, and these were held at different centres throughout the country.

* "Some thoughts on education and training for transport in the United Kingdom," presented by J. A. R. Turner, A.M.Inst.T., before the Institute of Transport Metropolitan Graduate & Student Society in London. February, 1945

A Railway Operating Analogy

THE article headed "U.S.A. Railways in 1944," which appeared in our May 11 issue, showed that the American lines handled an enormous traffic last year with praiseworthy despatch. Unhappily the current year opened with the worst snowstorms experienced for 60 years in the area east and south of the Great Lakes. For the first time during this war serious congestion was caused on the railways serving that important territory and its effects may be felt for a long time. Our American friends have met this sudden emergency by taking much the same steps as the British railways took when severe weather upset their working in the first winter of the war. In 1939 our traffic working proceeded evenly until Christmas when fog descended on the land and was followed by a protracted cold spell, culminating in heavy snowstorms at the end of January, 1940. The setback to our goods traffic was widespread and started a spate of traffic restrictions which were not easily removed. The railways' powers of recovery were hampered by shortage of manpower. Too many railwaymen had been called to H.M. Forces and substitutes of a good type were hard to secure. Sickness was also rampant amongst train crews who had suffered from exposure to the elements. To make matters worse some locomotives were in poor condition owing to the want of skilled attention at the running sheds and the quality of coal was deteriorating. A brief account of events in America up to the end of January will reveal the existence of a similar state of affairs over there.

The trouble began in December when, on two occasions, more than a foot of snow fell in the Buffalo district and was piled into drifts by high winds. On New Year's day a thaw came with warm rain, only to be followed by 15 in. of snow and a quick freeze. Hundreds of freight wagons were frozen to the rails and had to be released by pick and shovel. Thousands of tons of snow and ice were loaded up and removed from the yards. Just as the railways were getting traffic to run freely again, three or four inches of sleet fell on January 22 and again on January 30. On both days a gale blew and it was extremely cold. The total snowfall during the two months was 90 inches—things always happen in America on a big scale.

Many railwaymen could not get to work as road transport was often stopped and the railways were understaffed in any case. No fewer than 74 industries in Buffalo, engaged in war work, had preference over railways for manpower. The supply of indifferent coal for locomotive use added to the operating difficulties. The total number of wagons held up by the cumulative effects of the weather was estimated at 200,000.

The position became desperate enough to call for the intervention of the director of the Office of Defense Transportation. Various embargoes were placed on traffic, the most stringent being dated January 27 and applying for three days to all traffic, except war freight, to, through or within the territory east of the western side of Indiana and north of the Ohio river and the Chesapeake & Ohio Railway between Huntington and Potomac in Virginia. In the meantime the railways which had not been hard hit by the blizzards proceeded to divert trains from the lines which were blocked. The Erie Railroad, for instance, worked four relief trains a day and the Chesapeake & Ohio Railway took over so much traffic that it handled the heaviest week's business in its history during the week beginning January 22. The Chesapeake & Ohio Railway accepted as many as 500 wagons a day at Columbus and 75 tank wagons of oil a day at Cincinnati; moved empty wagons free of charge to get them to producing centres in the North and hauled 500 refrigerator wagons to junctions with Southern lines. This railway also undertook to take over 60 loaded wagons a day at Chicago for North Eastern destinations and carry them through Virginia. The railways could scarcely have co-operated more zealously if they had been unified instead of carrying on under private management!

Load-Compensating Freight Brakes

THE year 1944 marked the seventy-fifth anniversary of the first successful compressed-air brake, invented by George Westinghouse in 1869. It is an appropriate moment, therefore, to look back over the many vital improvements made in that apparatus since the early "straight-air" brake was first applied to railway vehicles. One of the most interesting of recent developments is covered in a paper on load-compensating freight brakes recently presented by Mr. C. D. Stewart, Chief Engineer of the Westinghouse Air Brake Company, of Wilmerding, Pennsylvania, at a Railroad Division session of the annual meeting of the American Society of Mechanical Engineers in New York. Mr. Stewart gave

an excellent, though necessarily brief, survey of the inventions and improvements forming chief milestones in air-brake progress. These were the introduction of the plain automatic brake in 1873, the quick-action brake (operable only on emergency applications) in 1887, and the quick-service brake (in which the "relaying" feature of the quick-action triple valve was extended to cover service as well as emergency applications) in 1905. In the next 28 years the most intense research produced many material improvements, culminating in the "AB" valve introduced in 1933, in which the transmission speed throughout the train was increased about 50 per cent. above that of previous equipments—and, in fact, approached the speed of sound, which would appear to be the highest attainable in those circumstances. Further lines of research include experimental work in controlling the rate of generation of the braking forces; and the provision of more uniform braking forces. The latter offers considerable scope for improvement.

There has been a tendency in the U.S.A. to increase materially the load-carrying capacity of certain vehicles by devices which increase only slightly their empty weight; permission was therefore granted by the Association of American Railroads to increase the empty braking ratio from 60 per cent. to that necessary to ensure a safe minimum ratio, as long as the limit of 75 per cent. was not exceeded. In the same period the concurrent tendency in locomotive practice is for the weights to increase, particularly tender weights. Differences in the gross to tare ratios between the vehicles in a train, and between the train as a whole and the locomotive, have thus continued to grow.

Let us imagine a heavily-loaded train drawn by a locomotive having a temporarily low supply of fuel and water: the braking effort on the train will be a minimum, and that on the locomotive will be a maximum—conditions which can aid in promoting harmful shocks. In these circumstances, U.S. enginemen frequently keep the regulator open when first applying the brakes, in an attempt to equalise their effectiveness on the locomotive and on the train. The opposite conditions occur when the vehicles are empty and the tender is full. A special feature in the latest equipment provides control over slack adjustment; nevertheless, the wide variation in braking ratios is not ideal.

A variable-capacity brake is therefore required, which automatically compensates for increase in loading. This new equipment uses a double brake-cylinder arrangement to provide a maximum braking force of, say, 60 per cent. for the empty vehicle, a maximum braking force for the fully loaded vehicle, of 20-30 per cent., and some intermediate figure (near the maximum) for vehicles partly loaded.

Mr. Stewart points out that the first principle involved in adjusting braking forces is that the mechanism for setting the car braking ratio, so that it corresponds with the loading, must be automatic. The setting must take place when the car is stationary, and then the measuring device must be out of engagement with any part which can vibrate as a result of the car's motion. This avoids false registration and unnecessary wear. The tender weight registration device, however, must function continuously, as the tender weight varies continuously; and here, too, the adjusting mechanism must be automatic. On the engine itself, however, manual adjustment is needed, as there is no simple means for registering on the locomotive the load on the cars.

During braking operations the brake cylinder for the "empty" condition operates first, and if the car is empty, or up to one-fourth loaded, it is the only brake cylinder to operate. As the load is increased from one-quarter to full load, the "load" brake cylinder adds the correct braking force to that of the "empty" cylinder.

The brake equipment of the modern American high-capacity tender can be like that just described for freight vehicles. The spring deflection can be used to adjust the braking forces in proportion to the changing load of fuel and water. Another method is to use a mechanism for weighing the water, which can be done very accurately; and there are fewer mechanical difficulties than in the method depending on spring deflection.

The change in the braking ratio on the engine is effected by manual adjustment of the pneumatic devices involved. A simple manually-set pneumatic relay, of the differential type (in which air pressure on the primary side causes the development of one of a choice of several pressures on the secondary side) can be used. The engineman, on learning the average weight per vehicle of his train, and knowing whether it is a high-speed train of empties or a lower-speed heavily-loaded train, will make the manual adjustment of the relay so as to regulate the braking forces correctly for the particular run.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Institute of Transport

Archivo del Transporte,
Calle del Prado, 26
Madrid, 23 de Marzo

SR. DIRECTOR DE "THE RAILWAY GAZETTE"

Muy St. nuestro y de nuestra mayor consideración:

Nos interesa extraordinariamente conocer los antecedentes de la creación y funcionamiento del "Instituto de Transportes," al que se refiere el artículo de esa Revista publicado en la página 649, del número correspondiente al 29 de Diciembre de 1944.

Mucho le agradeceríamos que nos pusiese en relación con dicha entidad, o solicitase de ella para nosotros el envío de algunas publicaciones entre ellas, las publicadas con motivo de las bodas de plata (Silver Jubilee).

Anticipándole las gracias por la atención, quedamos a sus órdenes attos. ss. ss. q. e. s. m.

El Director,
BLAS VIVES

Continental Routes

12, St. John's Park, S.E.3. April 26

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The reference (on page 398 of your issue of April 20—Destruction of the Schildesche Viaduct) to the "Berlin—Cologne main route, which is four track throughout," though strictly accurate, seems to me to be rather misleading. Berlin to Lehrte, via Magdeburg and Brunswick, is 30 km. more than the direct route via Stendal, and the alternative line to the Ruhr via Magdeburg is really through Brunswick, Hildesheim, Hameln, Altenbeken, and Soest to Uuna, where it joins the "Southern" line from Hamm to Cologne via Schwerte, to which your paragraph referred. This route of course avoids the Schildesche Viaduct, though there is a further alternative line from Hameln joining the Hanover—Hamm section near Bad Oeynhausen.

So many of the pre-war continental routes and their train services now belong to history, that I should also like to correct a reference, in your article on the electrification proposals for what was the P.L.M. main line, to a 9-hr. steam schedule between Paris and Marseilles with trains of 600 tonnes. The only 9-hr. schedule advertised was that of the aerodynamique train, at 12.00 from Paris, in 1937-38, and it was a four-vehicle formation of 200 tonnes. It could not accommodate the traffic offering, and was replaced in May, 1938, by an ordinary train, strictly limited in weight to 330 tonnes, and allowed 9 hr. 5 min. for the journey. Very possibly a 600-tonne train could have been operated at the same schedule, but these are the facts.

Yours faithfully,
R. E. CHARLEWOOD

The Question of Gauge

TO THE EDITOR OF THE RAILWAY GAZETTE
Burma Railways,

Telegraph Building, Simla. April 23

SIR,—I was interested in the article "Railway Progress and Prospects in New Zealand" by Mr. George C. Stewart in your issue of February 23, but I was surprised at the author's advocacy of the 4 ft. 8½ in. gauge for New Zealand. It seems to me that for such a comparatively small and mountainous country, and one which it is not practicable to connect with any other country by train ferry, the 3 ft. 6 in.-gauge must be almost ideal. It has the advantage over the standard gauge on almost every point except perhaps the highest maximum speed. A 3 ft. 6 in.-gauge sleeper costs little more than half a standard gauge one (and this is no small item at about 2,200 sleepers-mile), marshalling yards occupy only about two-thirds the space of standard-gauge ones, curves on mountain sections can be sharper than on standard gauge, thereby easing the grade, and probably most important of all in economics, the load to tare ratio can be raised to about 3 to 1, instead of about 2 to 1, which is as good as can be got on the standard gauge.

As to what can be done on the 3 ft. 6 in.-gauge, one has only to refer to the South African Railways, whereon work the most powerful locomotives in the world, outside the North American continent, the "GL" class Beyer-Garratts of 90,000 lb. tractive effort. The S.A.R. coaches are wider than standard-gauge ones in England, and speeds up to 60 m.p.h. are run. The further capabilities of the 3 ft. 6 in.-gauge are shown by the latest "15 F" class 4-8-2 locomotives, described in your issue of December 8, 1944, which weigh 180 tons and have a tractive effort of 48,000 lb.

On the metre-gauge railway which I have served for the last 25 years, the standard 4-wheel wagon carried a load of 15 tons on a

tare of 5 tons 6 cwt. to 5 tons 8 cwt. The daily up and down fast goods between Rangoon and Mandalay was a fully vacuum-braked train loading to 1,100 tons behind the tender, and was timed to cover the 384 miles from Malagon Yard (Rangoon) to Mandalay in 23 hours. It frequently arrived in Mandalay up to one hour before time. Only 173 miles of this journey was a double line.

The Central Railway of Brazil has 2-10-4 freight locomotives with a tractive effort of 41,100 lb.

Instances innumerable can be cited to show that the metre and 3 ft. 6 in.-gauge are no impediment to heavy freight haulage and, indeed, that haulage on those gauges is more efficient than on the standard gauge by reason of the more favourable load to tare ratio.

The only argument I can see against the 3 ft. 6 in.-gauge is that 60 m.p.h. is probably the limit of safe speed. I do not know New Zealand personally, but from what I have read I doubt whether there are many long stretches where such a speed could be exceeded even with a 4 ft. 8½ in.-gauge.

I would suggest to Mr. Stewart that he be thankful that he has the most economical gauge for freight haulage, and that he should not attempt to saddle his country with a capital expenditure, which would in all probability preclude the railways from ever paying their way.

Yours faithfully,
E. V. M. POWELL, M.I.E.E.
Locomotive & Carriage Superintendent

L.M.S.R. Group of Hotels

The Bay Hotel, Gourrock,
Renfrew. May 11

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The article "A Great Railway Hotelier" in your issue of April 27 was most interesting to one who knows the L.M.S.R. Hotel & Restaurant Service fairly well. The L.M.S.R. group of hotels demonstrates to the world, that given proper training, Britons can manage hotels as well as anyone in the world.

It is, I think, an unfortunate feature of the statutory form of railway accounts, that they do not show the amount of capital employed in the various ancillary businesses, so that the unfortunate proprietor cannot ascertain the rate of profit on these undertakings, and thus assure himself that all parts of the business are bearing an equal strain. Surely it verges on the absurd, that all the information vouchsafed to the proprietors once a year concerning a business with an annual turnover of £3,000,000 odd is contained in about six lines. Should it not be assumed that the statutory form of accounts prescribes the minimum and not the maximum of information to be given to those interested?

A recent visit to the Midland at Manchester, proved that your view of the alterations to the ground floor, is, alas, only too right, and I refrain from further comment.

When more staff is available, I hope we shall see a progressive replacement of the aliens employed in the restaurants of all hotels in this country by properly trained Britons, who will doubtless be passing through the various recently established schools for hotel work in ever-increasing numbers.

Yours faithfully,
AUBREY F. INGLEFIELD
Member of Council,
The British Railway Stockholders Union

1,000 Millions

4, Gordon Street,
London, W.C.1. May 8

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I was surprised to read in your article on the "British Billion" that "In France and the United States, however, it (the word billion) has come to mean a thousand millions."

Unless French usage has undergone a considerable change of late, the word generally used to denote one thousand millions is known as "un milliard."

Yours faithfully,
C. CARTY

Billions and Trillions

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I note in a recent issue of the *Railway Age* that Colonel Johnson, Director, O.D.T., spoke of freight traffic totalling around one trillion ton-miles for the third successive year. Of course, he meant 1,000 multiplied by itself three times of your "British billion," to which you referred in your issue of May 18. A British reader would be uncommonly stupid if he thought that the Americans worked 1,000,000,000,000,000 ton-miles in a year, would he not?

Yours faithfully,
VIGILANT

The Scrap Heap

DINING CAR XMAS DINNER IN 1915
Harking back to the last war, I have been looking up some old records and among them I found the menu of my Christmas dinner in 1915. It was some dinner too. Mutton broth, halibut and shrimp sauce, roast beef, roast turkey, plum-pudding, savoury, cheese, dessert—all provided by the Midland Railway on an express train.—Sir Ronald Davison in "The Sunday Times."

CIVIL SERVANTS MAY WASTE TIME

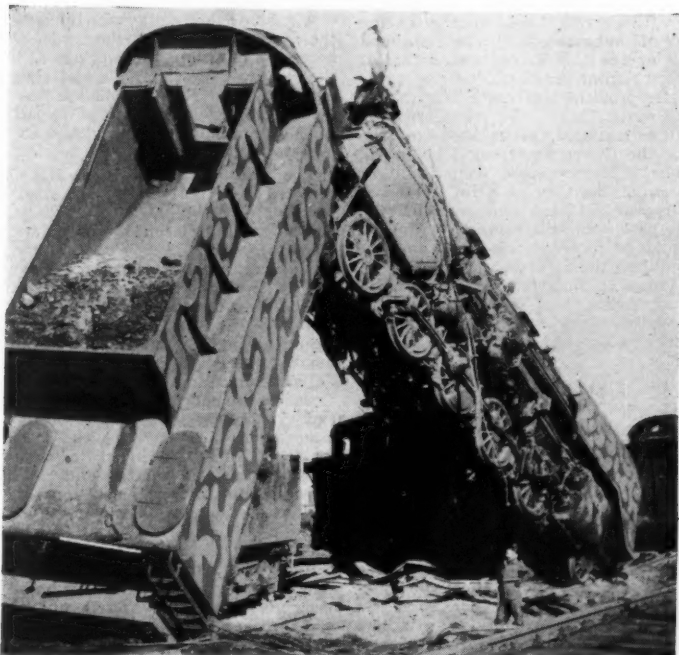
Sir H. Williams asked the Financial Secretary to the Treasury whether he is aware that every afternoon, in the streets of Westminster, there are queues of employees of Government Departments, waiting to collect supplies of evening newspapers from the street sellers; and will he take steps to stop this practice which wastes so much of the time of the employees concerned.

Mr. Peake: The answer to both parts of the Question is "No, Sir."—From "Hansard," May 17.

"Highball," in U.S.A. railway language, means "go ahead." It was comparatively unknown in Europe until the American troops came over. Its use in the U.S.A. dates back to the time of primitive signal systems which depended upon the ability of the agent at one station to see, with a spy glass, if the signal ball at the next station was at the top of its pole, or "high."

Twenty-four hours after being discharged from hospital, a Muslim who had been a victim of the Jungshahi (India) railway accident was back there—thanks to a dream. He had left by train for his village, and in his sleep, when about 25 miles from Karachi, he threw himself out of the window. He had been dreaming

The Result of a Bomb in Munster Railway Yard



The above unusual position of locomotive and tender was assumed after an allied air raid on Munster



Nameplate of the 1,000th British built locomotive to be sent overseas

of the Jungshahi accident (Jungshahi is about 53 miles from Karachi). Reference was made to the collision in our April 27 issue.

On Saturday, May 5, just before the final surrender of Germany, the Lisbon office of the German State Railway was closed and its employees were given three months' money. This office was of considerable size, and in recent years has been of more political than transport importance.

100 YEARS AGO

From THE RAILWAY TIMES, May 24, 1845

SOUTH-EASTERN RAILWAY. — LOCOMOTIVE SUPERINTENDENT.—Preparatory step having been taken for the dissolution of the Joint Locomotive establishment of the South-Eastern, Brighton, and Croydon Companies, the Directors of the South Eastern Railway Company are prepared to receive Application, accompanied by Testimonials from persons qualified to undertake the Superintendence of their Locomotive Department. The Salary will be £500 a-year.

W. O'BRIEN, Secretary.

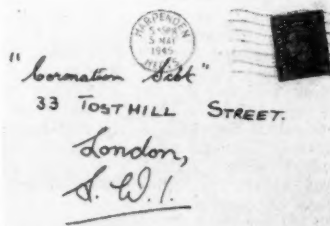
London Terminus, 23rd May, 1845.

INSIDE OUT OR "VICE VERSA."

An Indian storekeeper entered the following remarks on the back of an indent and returned it to the sender:—

"Please note 'calipers outside' are not calipers 'inside outside' although calipers outside when turned inside out can become calipers inside outside for outside inside work. The reverse is not true as calipers outside inside turned inside out do not become calipers outside for outside work and vice versa.

"Your indent is therefore returned."



Another example of a strangely addressed envelope which has reached this office

THE "WELL OF ENGLISH UNDEFYLED"

An official statement issued by the European Regional Office of Unrra begins with this sentence:—"The Director-General of Unrra has made new assignments of organisation responsibility and of personnel within the European Regional Headquarters to shape the organisation and the staff assignments for most rapid and effective action in the period of intensive field operation now opening.—From "The Times."

TAILPIECE

Those blackout nights are banished quite
And all the railwaymen rejoice;
No longer need they screen the light
So now give thanks with heart and voice
Especially workers in the "yard"
Who marshalled trains in dead of night,
And found the business rather hard.

In spite of all that Fritz could do
It didn't seem to matter much,
For still they got the wagons through,
Instead of sight—they worked by touch;
These, too, are heroes; and these chaps
(Now blazed in glory as their due),
Are sorting goods to beat the Japs.

A. E. G.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Salaried Staff Quarters

The Railway Administration has agreed that free quarters shall be abolished as part of the emoluments of its salaried staff and that one-sixth of the salaries of these employees shall be consolidated with their emoluments. Those affected will be required to pay for departmental quarters occupied by them at the scheduled rental, provided the rent does not exceed one-sixth of their consolidated salary. The Administration has also agreed to a number of grading improvements affecting workshops foremen.

INDIA

Standing Finance Committee

The Railway Standing Finance Committee, which met in New Delhi on April 17, approved of certain works, at an estimated cost of Rs. 23 lakhs, for increasing the line capacity of the Tatanagar-Khargpur section of the Bengal-Nagpur Railway.

The committee approved also the creation of the post of Land Control Officer on the East Indian Railway.

WESTERN AUSTRALIA

Financial Results

The financial results of the Western Australian Government Railways for the six months ended December 31, 1944, indicate a loss of £158,699. For the corresponding periods of 1943 and 1942 the losses recorded were £243,351 and £1,751, respectively. Earnings for the first half of the current financial year were £2,219,100, compared with £2,210,100 for the six months of the preceding financial year. Working expenses showed a decrease from £1,936,151 for the half-year ended December 31, 1943, to £1,855,199 for the corresponding period of 1944-45, the principal reason for which was that in the first six months of the year 1943-44 a debit of £60,000 was recorded as a future provision for deferred maintenance, but no such debit was raised in the current year. There was also a decrease in the payments on account of war damage insurance, premiums on which have been discontinued.

There were increases of £9,000 in coaching earnings for the period, and of £26,000 in goods earnings. There is still a tendency for coaching earnings to increase. Goods traffic also is keeping up, although difficulties in respect of engine power and manpower have an effect on the haulage capacity; also, the tendency in recent months has been to handle a larger proportion of low-freighted traffic—for example, primary produce—which has its effect on earnings.

The train-mileage for the period amounted to 3,161,499, compared with 3,058,735 for preceding similar period. Earnings a train-mile were 168.46d., against 173.41d. Working expenses were 140.84d. a train-mile, against 151.92d. The operating ratio was 83.6 per cent., compared with 87.61 per cent. The return on capital for the six months was 2.79 per cent., which, after payment of interest, resulted in a loss on capital of 1.2 per cent.

Wheat Traffic

Drought conditions in eastern Australia have necessitated the import of wheat from Western Australia. Normally, the

bulk of the Western Australian wheat harvest is sent overseas; but, for various reasons associated with the war, a considerable volume of past seasons' wheat has been accumulated in the country areas awaiting shipment.

The conditions in the other states now make it imperative that a steady supply of wheat be made available to them from Western Australian stocks; and a programme was prepared recently which indicated that an average of 15,000 tons of wheat a week would require to be railed for six to eight months to meet requirements. Wheat, therefore, is being given a special priority over the bulk of other traffic.

The carrying out of the programme will require the provision of additional facilities and staff. Among the steps proposed is that of taking over from the Commonwealth 15 Australian standard Garratt locomotives now available. These, with the 10 similar engines placed in service on the Western Australian lines recently, will add materially to the tractive effort available. The Swan View tunnel deviation, referred to in *The Railway Gazette* of February 2 last, is nearing completion; this will remove the disability in respect of Australian standard Garratt locomotives traversing the tunnel in the uphill direction, and, by permitting double heading, will avoid the present necessity to divide heavy passenger trains over the Midland Junction section (double-headed working is not permitted through the existing tunnel).

CANADA

C.N.R. and Taxation

A Saint John City assessment Bill, which includes provision for a business tax on Canadian National Railways holdings at Saint John, was referred recently to private session of the Municipalities Committee of the New Brunswick Legislature after the hearing of submissions. The Regional Counsel for the C.N.R. contended that it was exempt from provincial or city taxation under provisions of the British North America Act. The C.N.R. considered the Bill unconstitutional, as no lands or property of the Government could be taxed. The railway had received a tax bill for \$89,000 from the City of Saint John last year. Appeal had been made immediately, and the case was still pending. Another Bill would be received this year, and the case would go the highest courts.

Mr. James D. McKenna, Mayor of Saint John, supporting the Bill, said that the C.N.R. paid taxes in Portland, Maine, Montreal and Toronto.

BRAZIL

Hydro-Electric Power

The Brazilian Federal Council for Overseas Trade resolved, in December, 1943, with the approval of the President of the Republic, to set up a Commission to investigate the question of developing the country's sources of water power and the provision of cheap electrical energy on a large scale. At present, such power is unequally distributed, forming an obstacle to industrial development. In many places where electrical power is available, its price is unduly high. A large capital outlay will be needed to create an efficient power supply network and a planned scheme will

be required for using the energy distributed. This will necessitate the bringing into consultation of the various local and State administrations and the principal industrial undertakings. It is known that the Brazilian authorities have had in view the encouragement of local industry and are looking forward to an appreciable expansion after the war, especially in the chemical mineral, agricultural and metallurgical fields. A section of the Ministry of Agriculture deals with irrigation, and river and stream conservation and there is also a National Council for Water Power and Electric Energy. It is intended that the various industrial interests which would benefit by the creation of a national grid system shall co-operate with these departments in estimating local power requirements.

The Government decided to bear the main burden of financing the scheme. The Commission appointed in accordance with this policy was presided over by the Director General of the Department of Mines & Mineral Resources, Senhor A. J. Alves de Sousa. The Commission met for the first time in August, 1944, and has since held a number of plenary sessions; three sub-committees have also been set up. The chairman, at the opening meeting, emphasised the difficulties of the task in hand. Many water power sources are available, some capable of giving more than 20,000 kW., and the first step to be taken would be to prepare a comprehensive map of the country, indicating all such sources of more than 10,000 kW. capacity and all existing generating stations of more than 5,000 kW., together with the railways, industrial areas and other particulars.

There are already some important examples of electric traction in Brazil in the Paulista main line and the Central Railways heavy suburban service; other electrification schemes are in contemplation. One duty of the Commission is to study the general question of applying electric haulage and to make suitable recommendations. It is intended to make full use of the right of way along the railways for the erection of the grid transmission lines. It will be necessary to arrange the work to fit in with the existing power stations and systems of distribution. The Commission has taken evidence from a number of experts and consultants, on the technical and economic aspects of the problem.

The State of Espiritu Santo has already received the report of Prof. F. Amarel, the designer of the Macabu hydro-electric project near Rio, on the best means of using the water power in its territory. The consultant of the State of Rio Grande do Sul, Dr. Noé de Freitas, the Chief Engineer of the Brazilian Electricity Supplies concern, Dr. Léo Pena, and Mr. F. Hodson, an expert engaged by the Federal Government to assist in plans for economic co-ordination, also submitted statements. Towards the end of its preliminary sessions the Commission drew up a formal programme of work covering the entire plan in detail. It is intended to standardise voltages and frequencies and, as far as possible, the various classes and sizes of generators, and, transformers, to ensure a uniform type of installation throughout the country. The latest forms of remote supervisory control will be employed. Brazil is a vast country, endowed with very great natural resources and the efficient utilisation of the water power of the country and the improvement of the communications system are essential elements in a policy of expanding internal and overseas trade.

Ventilation and Cooling of the London Tube Railways

By S. C. Mount, M.I.H.V.E.

THE ventilation of a tube railway raises problems which are not met by the ventilating engineer in the more usual large installation such as a factory, an assembly room, or a large block of offices. In the commercial or industrial example it is usual to find the building split up into floors, separate enclosures, or passages, to all of which a calculated amount of fresh air must be delivered and removed after use. The job may be one demanding heating or cooling or, under thermostatic control, it may function as either at different times of day or seasons of the year. The tube railway is just a long 12-ft. dia. hole bored some 50 to 100 ft. below the ground, with stations every $\frac{1}{2}$ mile or so which form the majority of the connections between the tube and the open air. This sort of layout calls for quite different treatment, and is bound to involve the use of a large number of large-sized fans at more or less regular intervals along the route.

Later in this article it will be shown that there are at work forces which are independent of the fans, and, to avoid

the discomfort which would be produced if these other large forces were entirely uncontrolled, it has been found necessary to provide relief shafts in addition to the fans and fan shafts. These relief shafts are generally the original borings into the ground at or between stations which were used to remove the spoil from the tunnels during construction.

It is also made clear in a subsequent paragraph that the primary duty of the fan is to cool the station and tubes. Thus it will be seen that the fan has to draw the air a long way. In fact it is drawn from some connection with the open air where it is relatively cool, down to tube level and along a length of the tube until it has picked up as much heat as possible; it is then evacuated by the fan back to the open air perhaps a mile from the starting point. The friction set up in such long lengths of tube necessitates the use of powerful fans often driven by 30- or 35-h.p. motors. The motive power is designed to overcome what the ventilating engineer calls "the water gauge" of the system, and it is this



factor that presents some difficulty to estimate with certainty in a tube. Nevertheless, it is most important to ensure an accurate design to counteract this element of resistance to the passage of air, in order that the energy to run these continuously-operating fans shall be used to the best advantage.

Historical

Those who can remember the early examples of London tube railways will be in a position to compare the conditions ruling at that time—say in 1902-3—and the high standard which the public rightly expects for its underground railways today. The first tubes were relatively lightly loaded, for the stock was lighter and trains shorter and less frequent; but they met the needs of the travelling public of that day. Now, with the suburbs and dormitory towns spreading for many miles into the country on all sides of London, a considerable increase in loading has taken place, and, to meet the increased traffic there has been expansion at all points. The modern stock is heavier, the number of cars comprising the trains is greater, and consequently the energy required to drive the trains at shorter intervals has also been increased. The result of all this expan-

KEY TO NUMBERS:

1. DRAUGHT RELIEF SHAFT RISING TO STREET LEVEL, FORMERLY PASSENGER LIFT SHAFT
2. CONNECTIONS FROM NORTHERN LINE RUNNING TUNNEL TO RELIEF SHAFT
3. CONNECTIONS FROM PICCADILLY LINE RUNNING TUNNEL TO RELIEF SHAFT
4. CONNECTIONS FROM MIDDLE ESCALATOR LANDING TO RELIEF SHAFT
5. FAN SHAFT RISING TO STREET, HOUSING AT HIGHER LEVEL 100,000 C.F.M. EXTRACTION FAN
6. CONNECTION FROM NORTHERN LINE RUNNING TUNNEL TO FAN SHAFT
7. CONNECTIONS FROM PICCADILLY LINE RUNNING TUNNEL TO FAN SHAFT

FAN AIRWAYS SHOWN THUS 
RELIEF AIRWAYS SHOWN THUS 

Scale
0 5 10 20 30 40 50 Feet

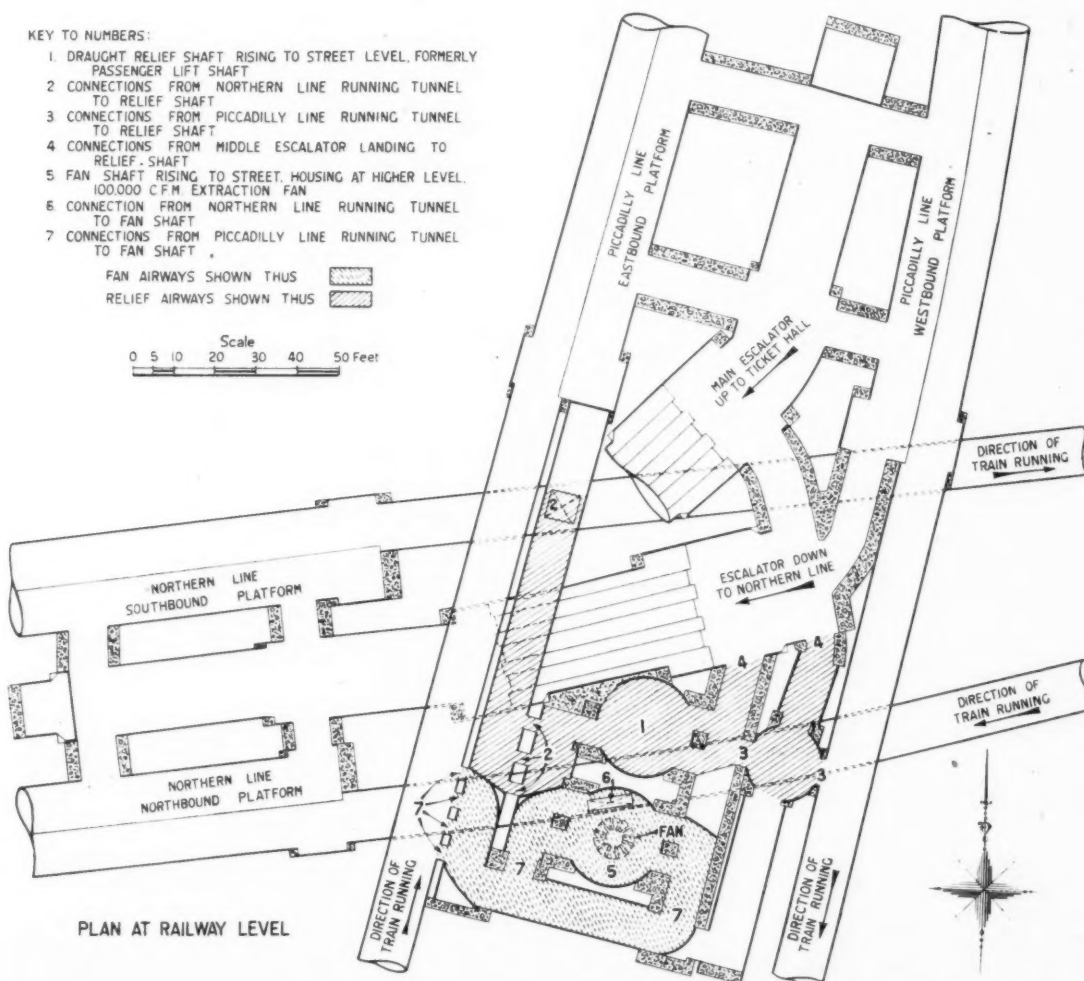


Diagram showing method adopted at Kings Cross to connect a large modern fan to two railways, the Piccadilly and Northern Lines

sion, expressed in scientific terms, is that the heat input into the tubes had increased considerably up to the outbreak of war, and mechanical means to dissipate it have had to be installed.

While in the days of lighter loading it was almost possible to rely upon the movement of the trains to evacuate the warmed air and to introduce fresh in its place, this is no longer practicable. Moreover, the enormous belt of clay surrounding the tubes has become stored to capacity with the heat generated in course of time. It is often said that the three generating stations owned by London Transport, namely, Lots Road, Neasden, and Greenwich, spend much of their energy heating the London subsoil.

Ventilation and Cooling

When considering so large a problem as the ventilation of the London tube railway system it is desirable to appreciate the dual functions of the fan plants. The first fan to be installed in the Central Line set out to draw air from the Bank and to discharge it at Wood Lane, the entries at intermediate points being closed during non-traffic hours as securely as possible. This only demonstrated the fact, now more fully appreciated, that it is useless to attempt to make air travel more than a mile or so, for when once it has absorbed enough heat to raise its temperature to that of the tube any further travel is a waste of energy. From this it followed that fans must be installed at intervals, each to deal with its own section, and further that the primary duty of a fan is to remove the heated air left by the passing train.

Close investigation of this problem of cooling indicates that the fan system introduces a continual flow of fresh air (at the prevailing outdoor temperature) and that the trains in their passage distribute this air along the warmed tunnels so that it becomes the vehicle for heat removal. The ultimate extraction of the warmed air is performed by the fan next in the circuit in the direction of the train's journey. During this cooling operation, which is the duty of first importance for the fan, there is circulated throughout all station passages a far greater volume of fresh air than can possibly be required for the purpose of ventilation. Thus the process of ventilation is fully performed, for the necessary quantity of fresh air is passed in and out of the spaces to be ventilated, while the force of the fan and the turbulence caused by the train movement ensure satisfactory distribution of this fresh air.

The drawing on page 517 shows the method adopted at Kings Cross to connect a large modern fan to the two railways—Piccadilly Line and Northern Line—and at the same time to provide draught relief. Without this draught relief, the bulk of the air moved by trains into and out of the station would have to find its way along the two escalator tunnels to the discomfort of passengers and staff. Much of this air is by-passed along connections marked 2, 3, and 4, via relief shaft 1, direct to open air. By this means the air speed in the escalator tunnel is prevented from reaching an uncomfortable level. The fan draws vitiated air from the Northern Line through connection 6, and from the Piccadilly Line through connections and airways 7; all this air is evacuated up the former lift shaft, numbered 5, to atmosphere. Due to the fact that this is an interchange station, there is a greater chance of two trains arriving simultaneously and so in-

creasing the normal draughts, and for this reason these special precautions were taken.

The fan airways are separately indicated, and the ducts isolated for use as draught relief and functioning in parallel with the escalator tunnels can be traced readily.

The shafts now being used for the fan and for relief are the old passenger lift shafts which, upon the installation of the escalators, were no longer needed. This is an example of how the shafts and subways, originally used by passengers to reach the lifts, can be connected to the tubes to provide the ventilation called for by the particular layout of the station.

Conditions Today

Today there are more than 100 miles of tube railways on the London Transport system, with some 80 stations. These figures do not include the Metropolitan and other lines in "cut and cover." Without counting the body heat given off by every passenger, the heating up of the tubes follows the transformation into heat of electrical energy supplied for trains while running and braking, electric lighting in trains and stations, and much auxiliary plant for escalators, pumps, signalling, and so on. Each makes its contribution, and the result of this collective heat addition has been the need to install some 85 fan plants with capacities ranging from 5,000 c.f.m. to 100,000 c.f.m., handling between them nearly 4,000,000 cu. ft. of air every minute.

Tube Temperatures

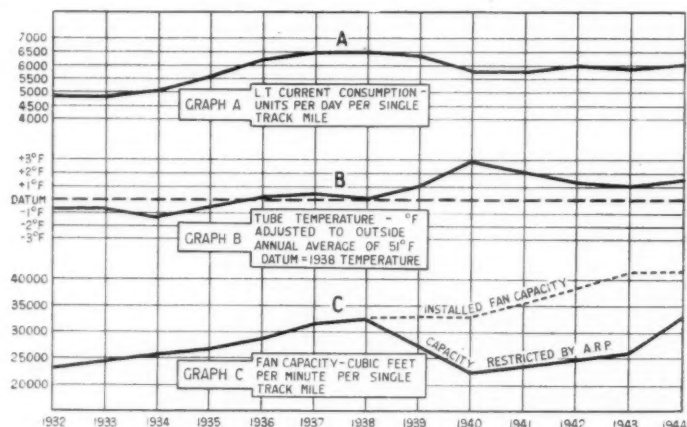
Comprehensive temperature records are available from 1932, at which time a tendency to rise was noticed. The accompanying graphs show clearly the trend of the principal elements responsible for tube temperature changes. Graph A shows the

of the many air raid precautions taken in conjunction with the Ministry of War Transport and the Ministry of Home Security. It also was found necessary to run others at lowered output. By the end of 1943 it became possible to reinstate a number of existing plants, and by that time also several new plants, being delivered at the beginning of the war, had been erected. Thus by the end of 1944 it was possible to show a small net increase of available plant capacity. This increase, coupled with the reduced heat input for the years 1939 and onwards, made it possible to check the rise of temperatures which was so noticeable during the early months of the war. However, the London Passenger Transport Board is not satisfied with the present position, and many schemes are under consideration for improvement of the comfort conditions in stations after the war.

The influx of shelterers into the tube stations was not without its effect on the temperatures recorded on the platforms. Such a congregation of persons on the platforms was not contemplated when the ventilation intake points were selected, and in consequence it was inevitable that a few complaints of cold were received during the winter of 1940. The comfort of the shelterers was in conflict with the needs of the railway for cooling. As a result, many fans were shut down for the cold parts of the night; the loss of fan running hours from this and other causes allowed the average tube temperatures to rise several degrees. At some parts of the system the temperatures are still not back to normal, for it is easier to add heat to the clay surrounding the tubes than to remove it, but this rise is being overcome steadily.

Development

At first when the need for ventilation



Graphs of temperature records from 1932

heat input based on records of the consumption of low-tension electricity per single track mile per day. A gradual rise to 1938 will be noticed. Graph B shows the average tube temperatures in degrees Fahrenheit for all lines. The sharp rise in 1939-41 is due to various A.R.P. works and to the admission of shelterers to the stations its change is closely related to the reduction in fan capacity noticeable in the third graph.

Graph C shows the extensions to fan plant to meet the rising tube temperatures. These extensions were held up at the beginning of the war, and some plants were put out of commission as the result

became apparent the introduction of Ozonair plants on the Central Line (then the "Twopenny Tube") was tried. Soon it became evident that really it was for cooling purposes that more and larger fans were needed. The train itself moves many tons of air before it and draws a corresponding volume behind it every time it passes from one station to the next. Because of the close fit between train and tube, most of this air is forced out at the nearest station ahead and is then drawn in at that station as the train leaves. As a result the net introduction of fresh air by this means is not great and fans must be installed to promote a continual flow of

cooler air and to evacuate continually the warmed air. From this it follows that:—

(a) The greatest cooling takes place during the winter when the coldest air is introduced.

(b) The placing of each fan is a matter of great importance to ensure that the air handled has done its work of cooling, and that air is evacuated only at about the prevailing temperature of the tube.

(c) Fan capacity is required in reasonable sized units (a maximum of 100,000 c.f.m. has been determined) located at intervals, which are related to the volume of air in that section of the line and to the heat input to be expected.

At first it was the usual practice to supply fresh air to the tubes direct by means of fans running to pressure. Later it was found that by running fans to exhaust there were certain advantages to be gained, though the mechanical process of cooling can be carried out effectively by either method. With the exhaust fan expelling the warmed air direct from the tunnel, fresh air to feed the fan must arrive with the passenger at the station entrance and proceed with him down the escalator. Thus was overcome the disadvantage of meeting at the station entrance vitiated air, sometimes with the characteristic smell in the case of the older tubes. Moreover, this air, whether in winter or summer, will start at the same temperature as the air in which the passenger has been walking; in consequence he will progress more smoothly through the prevailing temperature gradient from street to platform. On the homeward journey this will also take effect, since even in winter, when the temperature difference is most marked, the incoming cold air will pick up a few degrees by the time it reaches the passenger just alighting at the platforms on his way out of the station, and so the shock of the return to the cold outer air is reduced.

Heat Storage in Surrounding Clay

Reference is made in an earlier paragraph to the heat stored in the clay surrounding the tubes. It is found that it takes several years of operation of the railway to complete this storage, and it is now the practice to provide fan capacity to prevent the maximum storage condition from being attained. By this means a reservoir of coolth can be maintained to help to keep down the temperature in the summer when the initial temperature of the cooling medium (air) is at its maximum.

At present research is proceeding into the rate of travel and depth of penetration into the clay of the heat generated in the tubes. Special resistance thermometers have been installed for the past few years in a part of a new tube in which the temperature has been kept constant, and where accurate measurement of the progressive penetration has been recorded at distances varying from 6 in. to 10 ft. from the tunnel lining. From this sequence of recordings, data are emerging which will make it possible to estimate the flow of air required in a new tube, having regard to the expected heat input. The intention is to maintain the clay reservoir incompletely stored with heat so that it can assist in summer time to maintain a more level temperature. Because of the higher average atmospheric temperature in summer, the normal air circulation is insufficient for the purpose; during the winter the surplus heat will again be extracted from the clay reservoir by using the colder air temperature prevailing at that season. For this purpose it is desirable to keep fans in continuous operation, while completing the annual cycle and maintaining a fairly steady

average temperature throughout the seasons.

Other Problems

From the foregoing it will be appreciated that, for instance, the change of station design resulting from the replacement of lifts by escalators introduced its own set of problems, and at the same time provided useful connection between the tubes and the outer air for the installation of larger fans, relief shafts, and so on. During the war many other difficulties have been experienced; some of these have been overcome, others have proved intractable and at certain stations temporarily the conditions have deteriorated somewhat.

First of all the expectation of the use of war gas by the enemy resulted in the running of all plants to pressure so that as far as possible a plenum should be exerted on the tubes and stations to prevent drawing in gas at a station entrance which happened to be near the scene of a delivery of gas. Happily this precaution was not tested in practice, and the fans have now been reversed to exhaust, with a corresponding increase in air flow through the tubes. Provision, of course, has been made for converting to anti-gas conditions rapidly should this be necessary.

Other A.R.P. problems included the introduction of concrete flood plugs, flood doors, staff dormitories, accommodation for shelterers, and other matters, all restricting the free flow of air in passages. Naturally, since the volume of air passing was unaltered, these restrictions caused the overloading of remaining passages and resulted in a certain amount of discomfort to passengers and staff. As usual, these troubles were accepted in good part as another little discomfort to be endured with patience. Crush walls became a feature of the station entrances at one period, and here again the train-moved-air would often meet an incoming passenger at high speed.

As a secondary effect of the use of tube station platforms by shelterers, particularly in 1940, there was a marked rise in tube temperatures. This was due to their complaints of the cooling of stations, particularly after traffic hours. Until diffusion or other control could be arranged, many fans were shut down for that part of the night when they affected the shelterers. This cut off as much as 16 per cent. of the fan hours on certain lines, and the loss of cooling took some time to overcome, as the temperature curves indicate. Nevertheless, as a matter of record it should be mentioned that there was no epidemic among the shelterers during their long use of the platforms as a shelter. The care extended to them by the medical authorities and local first aid workers is, of course, primarily responsible for this, but there can be little doubt that the large air change induced by the tube ventilation plants prevented the stagnant conditions that assist the spread of disease when large numbers of persons are gathered in one place.

The modern station has certain standardised accommodation, stationmaster's office, staff rooms, underground shops, ticket offices, cloak rooms, and so on. All these have to be considered for ventilation, and sometimes the necessary fresh air can be supplied by a platform pressure fan. In some of the latest stations air is delivered through a duct running in the platform invert to grilles in the wall at the back of the platforms. This provides a useful air movement which can be brought into service readily during peak

periods when the stationmaster considers this to be necessary. The escalator machinery room is usually supplied by a separate fan which runs to exhaust instead of to pressure and so removes any machinery smell without passing it through a space used by the public.

Humidity

To control the humidity in the tubes, even within fairly wide limits, would be a very costly proceeding, and moreover the benefit to be derived would not be in any way proportional to the cost, having regard to the cubic content of tubes and stations at about 55 million cu. ft. The absolute humidity therefore follows the seasonal changes in the atmosphere, and so varies widely. Average figures are some 4 or 5 grains to the cu. ft. in summer to 2 or 3 grains in winter. As might be expected, the absolute humidity in the tubes is a little above that at the surface at any given time, on account of the breathing by a large number of passengers, and the absorption by the warm air of any free moisture that happens to find its way into the tubes or stations.

It is, however, the relative humidity that is most noticed by the human. In view of the dry bulb temperature in the tubes being higher than that outside, both during winter and summer, the relative humidity on a station is generally of the order of 40 to 50 per cent. in winter and 50 to 60 per cent. in summer. Also, the air met in the tubes feels dryer than outside, and this is an advantage rather than the reverse. In this connection it will be appreciated that air movement is an important factor in the conditions making for human comfort, and this movement is always present, partly as the result of the action of the fans and partly because of the displacement of air as the train moves through the tubes.

General

Sufficient has been said to indicate that a complex system of fans is necessary to provide suitable conditions in the modern tube railway. It is to be expected, therefore, that the annual operating and maintenance cost for the system may run into £350 to £400 a station for the supply of nearly 50,000 cu. ft. of fresh air a minute for each station interval. This provides for fans to run continuously all the year round, with short periods for routine inspection at regular intervals.

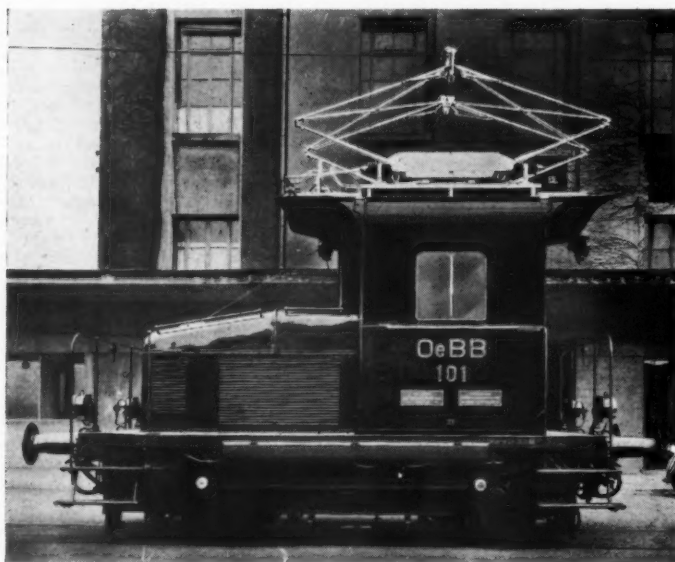
The maintenance of the fan plant is undertaken by a specially-trained staff which makes routine visits to ensure that the duty is performed continuously by every fan.

The actual control of running of the fans is vested in the stationmaster at the nearest point. In the case of interstation fans, the remote control gear is brought into the station premises for operation. This has been particularly useful during the war when for A.R.P. reasons some fans had to be shut down, for instance, during "Air raid warning RED."

By the continuous operation of the large number of fans provided, the air in the tubes is completely changed on the average every quarter of an hour throughout the year. A few parts of the older lines still remain to be brought up to this standard as the occasion offers. Without this air movement, which represents a speed of only about 3 m.p.h., there would certainly be complaints of stuffiness. Despite the chemical purity of air, it is recognised that the sensation of air movement on the skin is desirable, and in fact necessary for complete comfort.

Small Single-Phase Locomotives in Switzerland

The recently-electrified Oensingen-Balsthal Railway is using small tractor-type engines



Four-wheel single-phase electric locomotive tractor type for service on the Oensingen-Balsthal Railway

IN common with certain other lines in Switzerland the privately-owned Oensingen-Balsthal Railway found the official restrictions on the use of coal a serious handicap, which compelled it to cut down train services, at a time when it was faced with increasing traffic demands, to 54 per cent. of the pre-war level. This gave rise to great difficulties in handling the business of the various industries served by the railway, and finally the management decided to electrify the line, using the 15,000-volt, 16½ cycles, single-phase system, employed on the Federal Railways. The cost of the conversion was fr. 825,000, divided as follows:—

Contact wire, 8.2 km. (5.1 miles) ...	fr. 233,000
Two electric tractor-type locomotives ...	408,000
Strengthening of track, etc. ...	50,000
Rolling stock, inclusive of installation of electric heating in existing coaches ...	50,000
Alteration of the service telephone circuits and line wires along the route ...	38,000
Various items ...	46,000
	825,000

As previously recorded, electric working was inaugurated in October, 1943.

Until the two locomotives ordered were received the company borrowed a Federal Railways railcar and a C₂ 4/6 type locomotive from the Bern-Lötschberg-Simplon Railway.

Constructional Details

The contact line was constructed by Furrer & Frey, Berne and Zürich, and makes use of its wind-resisting suspension system which has proved so satisfactory elsewhere. Steel-pole supports were used only in the stations, and wooden poles set in concrete bases, elsewhere. The contact wire is of iron, as copper is in such short supply.

The Sécheron Works at Geneva has supplied two locomotives of the "tractor"

or shunting type, derived from the design employed on the Federal Railways and used for running service for the first time in 1942-43 by the Swiss South Eastern Railway, successfully.

Each locomotive consists of a cab with box portion in front covering the con-

troller, transformer and other details; the mechanical portion for each has been supplied by the Swiss Locomotive & Machine Works at Winterthur. The under-frame has four coupled wheels, driven by a geared motor with 1 to 6.66 ratio and forced ventilation. Air is taken through a filter under the cab roof and delivered by a blower contained in a casing near the driver. Hand braking on all wheels, with automatic moderable Westinghouse air brake is provided, as is reversible sanding equipment; the leading wheels only at any moment are served with sand.

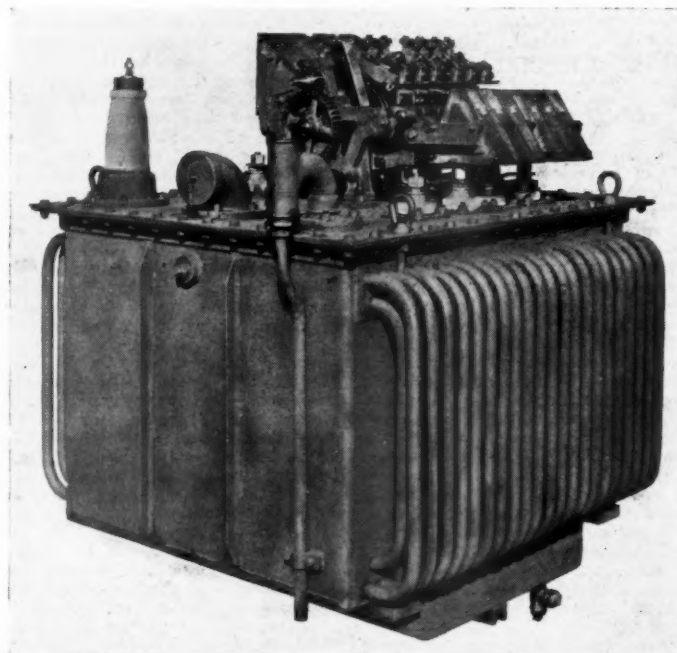
The main controlling arrangements are operated partly by hand, partly pneumatically. The controller itself, which picks up in succession the taps on the main transformer, with preventive coil bridge between each two, is moved by hand-wheels, one on the right, the other on the left, of the cab, an arrangement found especially convenient during shunting operations. The reversing switch is in the centre, with instrument board above.

The leading particulars of the Oensingen-Balsthal machines, illustrated in this article, are:—

Driving wheels, dia. ...	1,040 mm. (3 ft. 5 in.)
Wheelbase ...	2,800 mm. (9 ft. 2½ in.)
Length overall ...	6,595 mm. (21 ft. 7½ in.)
Hourly rating at wheel-tread ...	253 kW. at 25 km. p.h. (15.5 m.p.h.)
Continuous rating at wheel-tread ...	203 kW. at 29.5 km.p.h. (18.3 m.p.h.)
Hourly drawbar pull ...	3,700 kg. (8,140 lb.)
Continuous drawbar pull ...	2,500 kg. (5,500 lb.)
Average drawbar pull at starting ...	5,800 kg. (12,760 lb.)
Maximum speed ...	60 km.p.h. (37 m.p.h.)
Weight in working order ...	29 tonnes

Current Collection

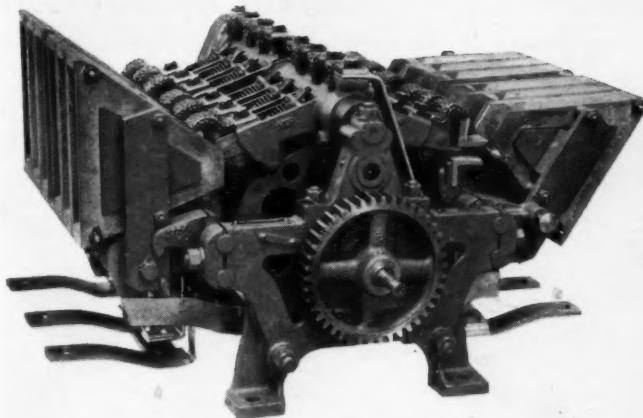
The pantograph is worked by air, and on the cab roof is an earthing switch operated by a crank handle, interlocked with the covering over the main transformer so that this cannot be opened without the connection to earth first being established. There is no main oil switch, but an electro-pneumatic cut-out in the motor circuit, and fuse in the high-voltage



Main oil-cooled transformer and above it the cam-type controller

The main oil-cooled transformer, 260 kVA hourly rating, has six taps, 0 to 322 volts, and the controller has 12 cam-driven contactors, geared so that the operating hand wheel has to be turned through 90 deg. to pass from one step to the next. Appropriate interlocking is inserted between the control, reverse and pantograph movements. The auxiliary circuits and appliances comprise the blower motor for the forced ventilation; an air compressor driven by a Winterthur type KLL 8 n. 16.5 h.p. series motor; an 18-volt dry-plate rectifier with transformer, for the control and lighting circuits and charging the 18-volt, 100 a.h. lead-type accumulator battery; cab heater and foot-warmer plate; equipment for the 1,000-volt train-heating circuit; and dead man's handle control gear.

The privately-owned standard-gauge Oensingen-Balsthal Railway leaves the main Solothurn (Soleure)-Olten line of the Swiss Federal Railways at Oensingen, and runs through Enge, Kluss and Thalbrücke.



Enlarged view of cam-type controller

5 in.)
2½ in.)
7½ in.)
1 km. p.h.

5 km.p.h.

0 lb.)
m.p.h.)

air, and
switch
locked
trans-
d with-
t being
switch,
in the
voltage

The microphone is a specially robust moving-coil unit. The microphone is adjusted to give high intelligibility, which is of more importance than "naturalness"

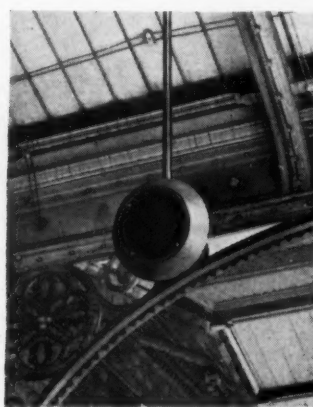
Output controls are fitted to each loud-speaker group line. These employ a tapped auto-transformer, which ensures that variation on any one group does not



A general view of announcers room

where troublesome background noises have to be overcome. The two 30-watt amplifiers normally operate in parallel. In the event of a failure of one amplifier, the faulty apparatus can be switched out of operation. The system then functions as before, except that the loudspeakers operate at slightly reduced power. The ampli-

The announcer is provided with a control

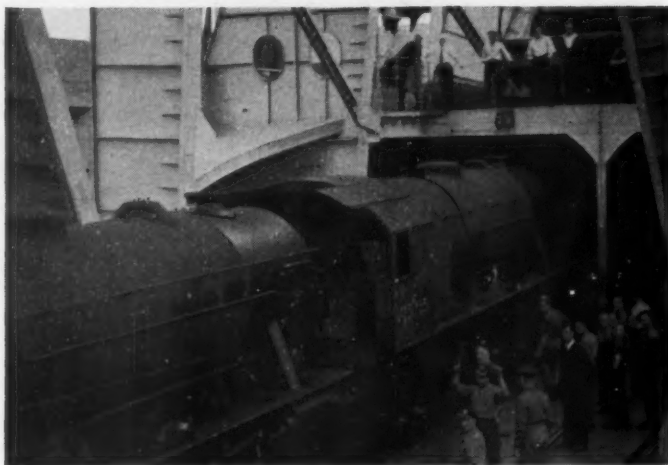


A suspended loud-speaker

The output of the amplifiers is standardised at 100 volts for the full-rated output, and each loudspeaker contains a matching transformer to produce its rated output at this voltage.

British Locomotives for North-West Europe

More than 1,000 main-line British-built locomotives have been ferried to the Continent since D-Day



1,000th locomotive being propelled into position on the deck of the Southern Railway train ferry "Hampton Ferry"

THE main-line locomotives specially designed by the Ministry of Supply to War Office requirements and built by

the British locomotive building industry for use in connection with the liberation of Europe are powerful freight locomotives

of the 2-8-0 and 2-10-0 classes, each capable of hauling trains of 80 fully-loaded wagons. Illustrated descriptions of these locomotives were given in our issues of September 10, 1943, and December 15, 1944, respectively. The 1,000th British-built main-line locomotive which was shipped on May 9 was one of the 2-10-0 class.

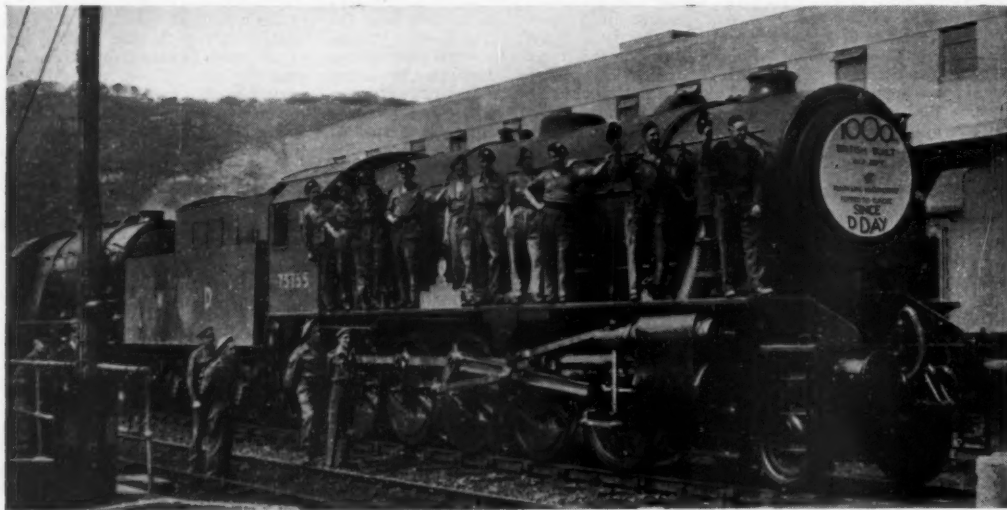
These locomotives are so designed that they are capable of being used both on British and Continental railways; consequently they became a familiar sight on the home railways before and after D-Day when they were used in this country to assist with the vast increase in railway traffic which arose whilst the invasion forces were being built-up.

As Field-Marshal Montgomery's forces have fought their way through France, Belgium, and Holland into Germany, the locomotives have been shipped across the Channel to continue their work of bringing supplies to our fighting men, and to give valuable help in the distribution of food, medical stores, coal, and so on, for the relief of the liberated peoples of Europe. The locomotives are now being driven by British Transportation troops and civilian railwaymen of the liberated countries.

In addition to the main-line freight locomotives, more than 100 British-built shunting locomotives, some steam and others diesel, already have been shipped to North-West Europe.

The 1,000th engine was conveyed to the Continent from Dover on the Southern Railway ferry steamer *Hampton Ferry*.

(See also pages 515 and 524)



The 1,000th locomotive—one of the 2-10-0 austerity locomotives built by British manufacturers to the order of the Ministry of Supply for the War Department—at Dover on May 9

MESSRS. DAVIS & LLOYD.—Messrs. Davis & Lloyd of 26, Victoria Street, London, S.W.1, have been appointed sole agents in Britain and the British Empire (exclusive of Canada), and Continental Europe (except Russia), for the Magor Car Export Corporation, New York, U.S.A., and the National Steel Car Corporation, Hamilton, Canada, with which they are associated. These firms have an international reputation as manufacturers

of railway rolling stock, including freight wagons and their well-known air dump cars.

CONTROL OF NON-FERROUS METALS.—The Ministry of Supply announces that as from May 11 applications to the Non-Ferrous Metals Control for licences to acquire copper and zinc for United Kingdom consumption will be considered by the

Control without restriction on the type of article to be manufactured. Certain restrictions on the release of copper and zinc will continue to be imposed as regards export orders. The statutory provisions regarding the acquisition and disposal of these metals are still in force and the procedure of submitting to the Non-Ferrous Metals Control, Grand Hotel, Rugby, schedules of orders with applications for licences should be followed.

RAILWAY NEWS SECTION

PERSONAL

The directors of the Bank of Scotland have appointed Mr. William Whitelaw to be Deputy-Governor of the bank, in succession to the late Lord Henry Scott. Mr. Whitelaw was Chairman of the London & North Eastern Railway Company from 1923 to 1938.

Mr. H. N. Sporborg is retiring at the end of June from the position of Chairman of the British Thomson-Houston Co. Ltd. He has completed 43 years' service with the company. Mr. Sporborg is retiring also from the positions of Vice-Chairman of Associated Electrical Industries Limited; Chairman of the Cosmos Manufacturing Co. Ltd., and of Lamp Caps Limited; and Director of the Metropolitan-Vickers Electrical Co. Ltd., and of the Switchgear Testing Co. Ltd.

We regret to record the death on May 2 of Mr. Avenel William Cragg Addis, at one time Acting Chief Engineer, Bengal & North Western Railway, who retired in 1919.

Mr. A. J. Romer, Manager of the Motor Vehicle Manufacturing Section of the Bristol Tramways & Carriage Co. Ltd. has been appointed a Director of the company.

We regret to record the death, in a recent aeroplane crash while returning to this country from Ofag VII B, Germany, after four years as prisoner of war, of Captain Robert Worsley Wheeler, Royal Engineers, aged 27, son of Mr. H. E. O. Wheeler, Deputy Traffic Manager, Southern Railway.

The council of the Institute of Fuel has decided to award the Melchett Medal for 1945 to Professor C. H. Lander, C.B.E.

MEMORIAL SERVICE FOR
MR. H. L. THORNHILL

A memorial service for Mr. H. L. Thornhill, formerly Chief Legal Adviser, L.M.S.R., was held at St. Pancras Church, Euston Road, London, on May 17. Sir William Bruce Thomas, K.C., President, Railway Rates Tribunal, gave an address referring to his valued friendship of 40 years with Mr. Thornhill. Others present, in addition to family mourners, included:—

Messrs. R. P. Humphrys, Chief Solicitor, L.M.S.R. (also representing Mr. P. W. Pine, Solicitor, Great Western Railway); Alexander Eddy, lately Chief Legal Adviser & Solicitor, L.M.S.R.; H. A. Chapman, Assistant Solicitor, L.M.S.R.; John Quirey, formerly Vice-President, L.M.S.R., and retired member of the Railway Rates Tribunal; G. H. Loftus Allen, Advertising & Publicity Officer, L.M.S.R.; John Shearman, Road Motor Engineer, L.M.S.R.; W. H. C. Clay, formerly Estate Manager, L.M.S.R.; Colonel F. A. Cortez Leigh, formerly Chief Electrical Engineer, L.M.S.R.; Messrs. C. L. Mason, formerly Divisional Carriage & Wagon Superintendent, Wolverton, L.M.S.R.; R. L. Mason; E. Coleby, Chief Assistant Solicitor, L.N.E.R.; William Bishop, formerly Chief Solicitor, Southern Railway, and at one time Assistant Solicitor, L.N.W.R.; W. W. Legg, Assistant Editor, *The Railway Gazette*; E. A. Doyle, Railway Rates & Charges Committee; and A. Tylor, of the Parliamentary Bar.

Mr. Norman Stocks, formerly Chief Accountant, Paraguay Central Railway, who as recorded in our April 20 issue, has been appointed General Manager, was born in 1900, and was educated at Christ Church Higher-Grade School, Southport. After a brief period with the Lancashire & Yorkshire Railway in its Southport goods office he entered the Merchant Service as Assistant Purser. He afterwards served with the South Wales Borderers. On demobilisation, in 1920, he continued his accountancy and



Mr. Norman Stocks

Appointed General Manager,
Paraguay Central Railway

other studies in Liverpool; and in April, 1921, he joined the Paraguay Central Railway as Assistant Secretary to the General Manager, in Asunción. Shortly afterwards he was promoted to be General Secretary. In 1935, after having been Acting Traffic Manager, Acting Chief Accountant and Acting General Manager for temporary periods, Mr. Stocks was appointed General Secretary & Assistant to the General Manager. In 1940 he was appointed Chief Accountant, continuing also to assist the General Manager. On the retirement of Mr. A. G. Cooper, in November last, he was appointed General Manager. Among other posts in Paraguay, Mr. Stocks is a Director on the Railway Pensions Board, and a member of the Internal Bondholders' Committee.

The late Lt.-Colonel R. T. G. Tangye, who was a Director of Tangyes Limited (of which he was Chairman from 1930 to 1934), and Deputy Licensing Authority for the Metropolitan and South Eastern Traffic Areas from 1934 to 1940, left £25,682.

Mr. F. Mitman, who joined the board of the Brush Electrical Engineering Co. Ltd. towards the end of last year, will be taking over from Mr. A. P. Good the functions of Managing Director on June 1 next. Mr. Good will remain Deputy-Chairman. Mr. R. W. Richards was elected recently a Director of the company.

Lt.-Colonel R. H. Edwards, Royal Engineers, who was released recently from active service, has resumed duty with the Great Western Railway, and has taken up the post of Assistant Divisional Docks Engineer, Eastern Ports Division, Barry Docks.

The following announcement appears in the Supplement to *The London Gazette* dated May 15, under the heading of Regular Army: Corps of Royal Engineers:—

Major (War Substantive Lt.-Colonel) C. E. A. Browning, M.C. (18661), to be Lt.-Colonel, December 31, 1944.

The following announcement appears in the Supplement to *The London Gazette* dated May 15, under the heading of Regular Army: Corps of Royal Engineers:—

Major (War Substantive Lt.-Colonel) J. S. Payne (18169) to be Lt.-Colonel, March 19, 1945.

Consequent on the announcement in our February 9 issue of the appointment of Mr. D. S. Bennett as Joint Managing Director of Tyer & Co., Ltd., we are informed that Mr. J. W. Punter, who has retired from active management after 38 years of service with the company, is retaining his position as Director and will act in a consultative capacity. Mr. V. S. King, who has been with Tyer & Co. Ltd. since 1915, has been appointed General Manager of the company.

PRESENTATION TO
MR. GEOFFREY MARSHALL

At a recent gathering of the members of the Railway Clearing House Goods Managers' Conference, a presentation in the form of a cheque was made to Mr. G. Marshall on his vacating the office of Chairman of the Goods Managers' Conference (consequent on his recent retirement from the service of the L.N.E.R.). The presentation was made by Mr. F. W. Lampitt, Great Western Railway (the present Chairman of the conference) who was supported by the members of the conference, Mr. A. E. Sewell (Chairman of the Rail Panel of the Road-Rail Conference), Mr. A. Maynard (formerly Chief Goods Manager, Great Western Railway) and Mr. E. E. Painter (formerly Secretary, Railway Clearing House). Mr. Marshall has been a member of the conference since 1920 (Chairman in 1924, 1935, 1943 and 1944). The gathering was unanimous in its appreciation of the excellent help he had always rendered. Mr. Marshall, in thanking the members, said that railway work had been extremely interesting and enjoyable, and had resulted in a comradeship which he had sincerely appreciated.

Mr. A. F. Moss, Acting District Superintendent, Manchester, L.N.E.R., who, as recorded in our May 4 issue, has been



Mr. A. F. Moss
Appointed District Superintendent,
Nottingham, L.N.E.R.

appointed District Superintendent, Nottingham, joined the Advertising Department, York, North Eastern Railway, in 1907 as a clerk. Later he served at Starbeck and Leeds, before joining H.M. Forces in December, 1914. He resumed his railway activities at Wolsingham in May, 1919, and occupied in succession positions as Relief Stationmaster; Staff Clerk, Superintendent's Offices, York and Hull; Traffic

Agent, New Bridge Street, Newcastle; Staithes Superintendent, Blyth; Yardmaster, Hull; Goods Agent, Newcastle; and Assistant District Goods Manager, Newcastle. In January, 1943, Mr. Moss was appointed Acting District Goods & Passenger Manager, Peterborough; and in January, 1944, he became Acting District Superintendent, Manchester.

COLONIAL RAILWAY APPOINTMENTS

The Secretary of State for the Colonies has approved the following appointments:

Mr. R. F. W. Hall, Senior Chargeman, to be Mechanical Foreman, Gold Coast Government Railway.

Mr. C. J. Wield, European Traffic Inspector, to be Assistant Accountant, Sierra Leone Railway.

DR. DORPMÜLLER INDICTED.

According to press reports a Czechoslovak Commission is to collect evidence against war criminals who have been indicted by the Czechoslovak Government. Those indicted include Dr. J. Dorpmüller, German Minister of Transport and General Manager of the German State Railway.

Mr. H. S. James, Solicitor Assistant (Parliamentary), L.M.S.R., who, as recorded in our May 4 issue, has been appointed Chief Parliamentary Assistant, was born on May 25, 1908. He entered the Solicitor's Office, L.M.S.R., as a clerk in 1924, and gained experience of Parliamentary work, particularly in connection with the railway companies' Bills concerning road and air transport in 1928-29. He was articled to the late Mr. H. L. Thornhill, then Chief Legal Adviser, L.M.S.R., in 1934, and was admitted a solicitor in 1937. Mr. James was appointed Solicitor Assistant

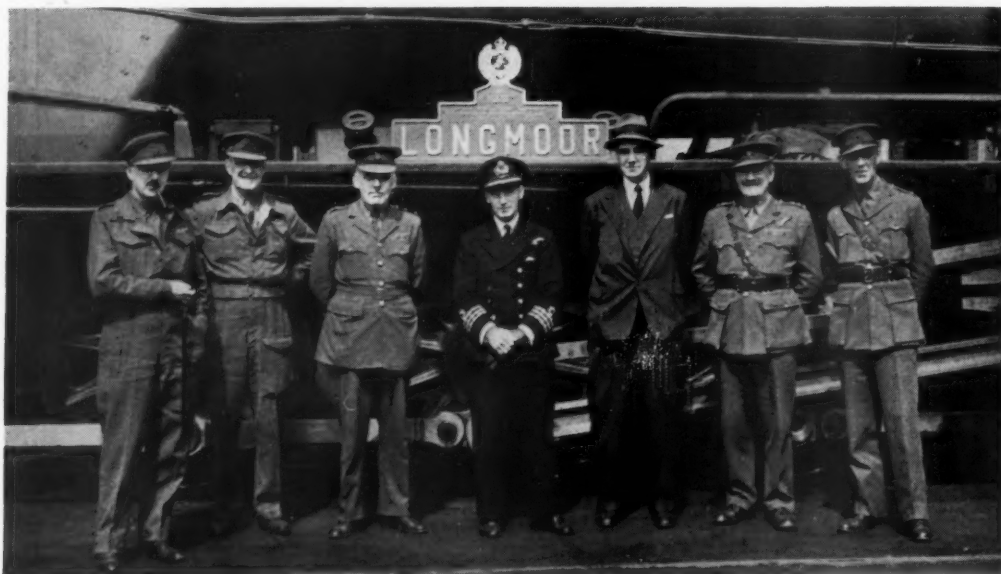
(Parliamentary) on November 1, 1937. Since 1941 he has largely deputised for Mr. H. A. Chapman, whom he now succeeds



Mr. H. S. James
Appointed Chief Parliamentary Assistant,
L.M.S.R.

as Chief Parliamentary Assistant, and who was Acting Secretary to the Railway Companies' Association until his recent appointment as Assistant Solicitor to the L.M.S.R. Mr. James's grandfather, the late Mr. F. James, was in the Parliamentary Department of the L.N.W.R. from 1868 to 1908; and his father, the late Mr. H. W. James, was in the same department of the L.N.W.R. and L.M.S.R. from 1890 to 1937.

The 1,000th British-Built Main-Line Locomotive for North-West Europe



The 1,000 British-built main-line locomotive (a 2-10-0 austerity type engine) for North-West Europe, before shipment from Dover on May 9 (see page 522)

Left to right: Colonel N. McK. Jesper, D.S.O., O.B.E., M.C., O.C. No. 1 Railway Home Group, R.E.; Lt.-Colonel C. H. J. Aldworth, M.C., R.E., A.Q.M.G. (M), Dover; Brigadier H. L. Woodhouse, C.B.E., M.C., D.D. Tn. (R), War Office; Commander S. M. Jameson, R.N.R., S.S.T.O., Dover; Mr. A. F. Walters, Ministry of Supply; Colonel J. V. Denning, M.C., D.D. Tn. (Railway Mech.), 21 Army Group; Major F. A. Angell, R.E., D.A.D. Tn. War Office

TRANSPORT SERVICES AND THE WAR—295

The Basic Petrol Ration

The restoration of the basic petrol ration, to which we made reference last week, is to become effective on Friday, June 1. It was abolished for the remainder of the European war on July 1, 1942.

Southern Railway Works in War

Brief details have been released of war work undertaken by the Brighton Works of the Southern Railway. Under great difficulties, owing to the geographical position, the Brighton works have produced 93 locomotives and nearly as many tender tanks. This production went on until September last, when the works were turned over to repair jobs, and preparations were made for the construction of new locomotives this year. In addition to the locomotive work at Brighton, there has been a considerable amount of Government contract work.

Scotland Street Tunnel

In 1938, when the question of protecting and maintaining the control organisation of the British railways and providing shelter for the staff in the event of air attack became a matter of immediate importance, the Headquarters of the L.N.E.R. Scottish Area in Edinburgh was particularly fortunate in having an underground refuge admirably positioned and suited for this purpose in the form of the disused Scotland Street Tunnel. This tunnel, which runs northwards under the city for some $\frac{1}{2}$ mile, was once part of the Edinburgh, Leith & Granton Railway, but was abandoned for railway purposes when the line was closed in 1868. It had the required ready access from the Waverley Station, is 23 ft. wide, and the ground above varies from 15 ft. to 70 ft.

The site affording the greatest protection was selected for a shelter and control centre. It is immediately below St. Andrew's Square and North St. Andrew Street. Steps were quickly taken to effect the necessary adaptations, the old track was lifted, and the floor made damp proof. A water supply was laid on, drainage provided, and electric lighting installed; oil lamps were also placed in the tunnel for alternative illumination. To improve ventilation, electric fans were introduced.

The entrance was protected by sandbags, replaced later by brickwork, which, with traverse of valve chambers constructed at each end of the tunnel, ensured the dissipation of blast from bombs bursting immediately outside. Another feature added later was the provision of anti-gas air locks at the entrance and exit of the shelter.

Three buildings were erected within the tunnel—one for the accommodation of the chief officers, the second to house the control office staff, and the third equipped as a first aid room.

The emergency control room is a building 20 ft. long by 10 ft. 6 in. wide, and has six controllers' desks supplied with telephone connections to stations, signal boxes, marshalling yards, and locomotive depots, etc. Broadly, it is a small-scale duplicate of the control office in the station.

The portion of the tunnel set aside as a shelter had to give accommodation to a staff of 1,250 employed in the station, including drivers, firemen, and guards on trains which might be standing in the station; ample space was available, as the number provided for was 3,000. For seating accommodation, a proportion of seats was withdrawn from station platforms not only in the vicinity of Edinburgh but also from stations many miles outside the city.

In view of the importance and value of the equipment, a guard was necessary at the entrance. At the outset, special constables were allocated to this duty. Later, the guards were withdrawn for more important duties elsewhere, and protection was provided in the form of an invisible ray, which, if broken, caused warning lights to be flashed at special points in Waverley Station and a bell to be rung in the station police muster room.

Help to Liberated Countries

A recent urgent call for food to help sustain the peoples of liberated countries resulted in a record effort by L.N.E.R. staffs at a much-bombed goods station in London. No fewer than 57,605 tins, each containing 15 lb. of biscuits, were taken out of stock and loaded on to vehicles in four days. One particularly rapid loading of 960 tins was completed in 40 min. Most of the stocks were stacked away from convenient loading points, but by improvisation a flour chute was used effectively, supplemented by borrowed roller conveyors and barrows. A letter of appreciation was received from the Ministry of Food.

Improved Retail Deliveries

The Prime Minister stated in the House of Commons on May 10 that retail deliveries may now be improved. Housewives who have been helping the war effort by carrying home their shopping can therefore look forward to a gradual restoration of retail deliveries. Since November last, in districts where the majority of traders agreed to extend their deliveries, petrol has been allowed for weekly deliveries of groceries, and for twice-weekly deliveries of greengroceries, meat, and fish. It has also been decided that this relaxation may be extended to any retail delivery pool, or to any individual trader where there is no pool, or where the pool is unwilling to improve its service.

Swiss-Lorraine Rail Traffic

Railway traffic between Basle and Lorraine was resumed on Monday, May 14, according to the Swiss Radio.

Travel between Great Britain and Ireland

The Home Office and the Ministry of War Transport have announced that from May 17 holders of brown or blue travel permit cards issued by the Passport & Permit Office are at liberty to travel freely between Great Britain and Northern Ireland; exit permits for each particular journey are not required. Applications for travel permit cards by residents in Great Britain within the ages of call-up, i.e., between 18 and 30, will not be granted normally without the consent of the Ministry of Labour & National Service.

As regards travel between Great Britain and Eire, and by Eire citizens between Great Britain and Northern Ireland, the former restrictions are maintained for the present; exit permits or visas from the appropriate Permit Offices are still required.

For National Registration and food rationing purposes, embarkation and landing cards must still be completed by all travellers at the ports of departure from and arrival in Great Britain.

It will be some time before normal cross-channel facilities can be provided. Meanwhile, the issue of sailing tickets is necessary to ensure that the numbers travelling to the ports to embark do not exceed the capacity of the ships. Passengers are not able to obtain rail or

steamer tickets unless they have first obtained sailing tickets from the railway company or steamship company concerned.

The Pyrimont Viaduct

A further step in the reconstruction of the Pyrimont Viaduct (to which reference was made in our April 7 issue, page 425) was taken on April 7, when part of the steel structure of the viaduct was dismantled and taken to Vevey (Switzerland) to be reconditioned by the Ateliers de Constructions Mécaniques de Vevey S.A. This viaduct was blown up by French Partisans on July 2, 1944, in an endeavour to make it impossible for the Germans to advance between Culoz and Bellegarde. The reconstruction is expected to be completed in time to enable traffic to be resumed on July 1.

The Swedish Railway Outlook

Because of further deterioration in the fuel position in Sweden, the allocation of coal to the railways will be reduced from July 1 to 30 per cent. of the quota of 1943 and 1944. It is fairly certain that this will result in a further drastic curtailment of the already-reduced steam-train services. Moreover, firewood will not be available for wood-burning locomotives in the quantities envisaged when the felling programme for the year ending June 30, 1945, was drawn up. The brunt of the task of distributing firewood to consuming centres will fall on the railways, and it is believed that further passenger train services will be cancelled in order to free locomotives for this. With the end of the European war, the conveyance of large numbers of Norwegian and Danish refugees, and possibly also of the German armies in Northern Norway, may prove heavy additional burdens to the Swedish railways.

Soviet Railway Traffic with Roumania

Moscow economic circles attach great importance to the economic re-orientation of Roumania towards the Soviet Union, and various agreements have already been concluded between the two countries with this object. It is now reported that the Russo-Roumanian trade agreement signed by Marshal Malinovsky and General Nicola Rădescu (the then Roumanian premier) on January 19 last, has now been implemented by a railway agreement, signed on behalf of Roumania by Gheorgiu Dej, Minister of Transport in the new Roumanian Government of M. Groza. The new agreement envisages the resumption of normal railway traffic between the Soviet Union and Roumania and the intensification of the Russian traffic through the port of Constanza. In pre-war days, the only railway connection between the Soviet Union and Roumania was to the north-west of Odessa crossing the River Dniester between Tiraspol (the Russian frontier station) and Tighina (the Roumanian frontier station). The connecting links between the two countries further to the north, between Rybnitsa (Russia) and Rezina (Roumania), as also between Kamenets-Podolsk (Russia) and Larga (Roumania) had not been worked since 1914. A ferry service is reported to be in operation between Carolina Port (on the Black Sea, to the west of Odessa) and Liman on the Roumanian side of the mouth of the Dniester, connecting the two railway systems. In the north-east of Roumania, the railroad of Atachi, on the Dniester, has no railway connection with Mohilev, the Russian railroad on the opposite bank. A comprehensive description of the railways in these Russo-Roumanian frontier regions was published in *The Railway Gazette* for January 21, 1944.

It is reported that large quantities of

locomotives and rolling stock of every kind, including considerable numbers of tank wagons, were found abandoned in Roumanian railway stations, marshalling yards, etc., in August last when the armies of Marshal Tolbuchin and Marshal Malinovsky advanced through Roumania in the direction of Jugoslavia.

A scheme is being discussed for connecting the Ploeskti refining area and the Baku oilfields with Odessa by one or two pipelines, as Roumania is the oil producer nearest to Odessa, the industries of which, once reconstituted, will be important consumers of oil.

Improved Railway Service in New South Wales

At the beginning of April, the War Railway Committee decided upon the restoration of sleeping cars, the improvement of train services, and the easing of the priority regulations governing interstate travel. These changes became effective on Sunday, April 8. The restrictions on the transport of racehorses and racing dogs remain. No special trains involving the use of coal will be run for sporting fixtures or for pleasure.

More than 40,000 persons left Sydney by train for Easter holiday resorts on March 29, most of them after a wild scramble at the Central Station. Trains pulled out with luggage-laden crowds still struggling to get on board. Many thousands more left by car, and throughout the evening there was a continuous stream of vehicles over the new Hawkesbury Bridge.

Siberian Railway Developments

In south-western Siberia, the Kartali-Akmolinsk—Karaganda railway, about 800 km. (497 miles) long, was completed in the summer of 1940. Kartali is a few miles to the east of Magnitogorsk industrial centre, on the Cheliabinsk-Orsk line, and the new line shortened the way of the coal supplies from the Karaganda area to Magnitogorsk by about 460 km. (286 miles). It is this railway which was referred to by Professor Khachaturov as the western part of the Second Siberian line, in his article published in our March 16 issue. It was known some years ago that an extension was being built from Akmolinsk eastward via Slavgorod, Barnaul (to the south of Novosibirsk), and Temir Tau, to connect at Abakan with a line branching off the original Trans-Siberian Railway at Achinsk. The Akmolinsk-Abakan line, some 900 miles long, is to be a further section of the new Trans-Siberian line and it was intended that it should be completed by the end of 1942, but we are informed by the Russian authorities that this was not accomplished because of variations in the railway construction programme necessitated by war conditions.

Abakan is to be linked with Taishet on the old Trans-Siberian line, and from there the new Trans-Siberian line is to lead first in a north-easterly direction to Kirensk and Vitim, and thence in an easterly direction to Orlovsk on the existing Khabarovsk-Komsomolsk line in the Siberian Pacific Province. A further eastward extension would lead to Sovetskaya Haven, a Pacific port opposite Sakhalin Island and formerly known as Imperatorskaya (Imperial) Port. This new Trans-Siberian line and its branch lines would total some 3,100 miles. Building was begun at Taishet and at Orlovsk in 1938 and according to announcements made by Molotov and Kaganovitch, certain of its sections were already in service in 1942. It is believed, however, that this refers only to the 300-mile section between Taishet and Kirensk. Apart from its economic importance, the main feature of the new line is its safe distance from the Japanese-controlled

border of Manchuria, close to which runs the easternmost section of the old Trans-Siberian line. Various connecting links of strategic importance have been built in the region to the north of Manchuria, and the map on page 526 shows the latest position so far as information has reached this country.

Calcutta-China Pipeline

The longest oil pipeline in the world has just been completed, according to a Delhi radio report of May 6. It begins in Calcutta, passes through Assam and over the mountain range into Burma, and then continues over the hump of the Himalayas across the border into China.

It may be recalled that, on December 15 last (page 606), we were able to record that pressure on the Bengal-Assam Railway had been relieved in some measure by the bringing into service of a portion of this pipeline, work on which was begun in March of last year. By December it had been completed from Calcutta to Upper

Burma, crossing mountains at altitudes as great as 5,000 ft., and was then supplying aircraft and motor vehicles in Upper Burma, as well as many Allied airfields in Assam.

The pipeline as now completed extends for some 1,800 miles.

Sydney-New Guinea Air Service

The Sydney-New Guinea civil air service was resumed on April 2. Quantas Empire Airways Limited announced that a weekly service would operate from that date until mid-April, when a tri-weekly service would be substituted.

Goods Wagon Loadings in India

Goods wagon loadings of the Indian railways increased by 10.5 per cent. on the broad-gauge, and by 16.7 per cent. on the metre-gauge, in November, 1944, compared with November, 1943.

From April to November 30, 1944, goods wagon loadings were higher by 3.14 per cent. on the broad-gauge, and 9.37 per cent. on the metre-gauge.

L.M.S.R. Summer Train Services

The summer train services of the L.M.S.R. in general follow the arrangements of 1944, although last year the withdrawal of trains at the time of "D"-Day prevented the bringing into operation of the various holiday relief trains that had been planned. An important feature of the new L.M.S.R. timetables is the excision of many more of the stops made by express trains at Watford, which were introduced at the time of the London blitz. Trains now ceasing to call at Watford are the 11.30 a.m., 4.25 p.m. (altered to 4.30 p.m.), and 7.5 p.m. from Euston to Birmingham and Wolverhampton, and 1.5 p.m. (altered to 1.10) and 4.5 p.m. to Blackpool; the only trains of importance now continuing to make the Watford stop in the down direction are the 8.15, 8.30, and 8.40 a.m. group, for Holyhead, Liverpool and Manchester respectively, and the 8.45 p.m. to Chester. In the up direction the Watford stops are withdrawn from the 7.40 a.m. from Llandudno, 7.55 a.m. from Blackpool, 11.10 a.m. from Windermere, 5.25 p.m. from Liverpool, and 5.30 p.m. from Manchester to Euston, and most of the trains concerned are accelerated by 5 min. in consequence. The 10.35 a.m. from Euston to Liverpool ceases to call at Rugby, and is non-stop to Crewe. On Mondays, Fridays, and Saturdays, a special express runs from Euston at 11.15 a.m. to the North Wales coast, calling only at Rugby and Beeston Castle to Chester. On Fridays and Saturdays the 10.25 a.m. from Euston is divided; the first part, leaving at this hour, has all stops cut out between Crewe and Oxenholme, except Lancaster, and is accelerated 57 min. to Windermere, arriving at 4.48 p.m.; it carries a special through portion for Penrith and Keswick, reached at 6.4 p.m. The Keswick portion is also attached to the 10.25 a.m. on Mondays and the Keswick and Windermere sections run independently from Preston on that day; there is no through service between London and Keswick during the winter. On Fridays and Saturdays the Carlisle section of the 10.25 a.m. from Euston leaves at 10.40 a.m. The Heysham-Belfast boat service once again is run daily and the 3 p.m. boat express from Euston to Stafford, Crewe, Wigan, Preston, Morecambe, and Heysham accordingly runs each weekday. On Fridays and Saturdays there is an additional express from both Liverpool and Manchester to Glasgow and Edinburgh at 12.30 p.m. and similarly in the reverse direction at 1.20 p.m., calling at principal stations. Many additional trains are

scheduled at weekends to and from the L.M.S.R. coast resorts, particularly Blackpool and the North Wales coast, and some of these are shown without intermediate stops over long distances, such as the 11.5 a.m. on Saturdays from Euston non-stop to Blackpool, the 3.55 p.m. from Euston to Blackpool on Fridays, non-stop to Preston, and others. In Scotland the Saturday 9.52 a.m. relief from Glasgow to Aberdeen is booked non-stop to Forfar, and two additional trains are run in each direction between Glasgow and Oban on Saturdays of which the 4.40 p.m. from Oban is booked to call only at Stirling, and the 11.50 a.m. from Oban, at Connel Ferry and Stirling only.

REORGANISED N.C.C. SERVICES

A complete reorganisation of the Belfast-Londonderry train service of the L.M.S.R. Northern Counties Committee took effect from March 5 last, as mentioned briefly in the March 9 issue of *The Railway Gazette*. It included substantial improvements to, and accelerations of, the main-line train services. Two express trains were introduced in each direction between Belfast and Londonderry, calling only at Ballymena, Ballymoney, Coleraine, Castle-rock, and Limavady Junction, and completing the journey in 2½ hr.; these trains leave Belfast at 8.25 a.m. and 5.15 p.m., and Londonderry at 8.30 a.m. and 5.20 p.m. The complete service from Belfast to Londonderry now provides trains at 6.5, 8.25 and 9.45 a.m., 1.10, 3.50, 5.15, and 6.20 p.m., averaging 2 hr. 47 min. on their journeys; and from Londonderry at 7.0, 8.30, and 10.45 a.m., and 1.10, 3.50, 5.20, and 5.50 p.m., averaging 2 hr. 36 min. This is 17 min. quicker than the previous average westbound journey, and 18 min. faster than the previous average in the eastbound direction, with an additional train each way; the minimum journey time is reduced from 2½ to 2¼ hr. An additional service between Belfast and Londonderry is provided at 11 a.m., and in the reverse direction from Londonderry at 2.20 p.m., by the through Larne-Londonderry boat train, which involves a change at Greenisland. The average journey time between Belfast and Portrush is reduced from 2 hr. 13 min. to 2 hr. 3 min., though the fastest time remains unchanged at 1½ hr. Restaurant or refreshment cars are attached to four of the principal trains between Belfast and Londonderry, and are also restored to the Portrush service, on two trains in each direction daily.

The Russian railways are of 5-ft. gauge; practically all the lines shown in Manchuria, Korea, and China are of standard (4-ft. 8½-in.) gauge; those shown in India are of 5-ft. 6-in. gauge. For details of recently-built lines see "Siberian Railway Developments" on the opposite page.

A
D
N
I
J
S
S
R
U
S
S
I
A
M
O
N
G
O
L
I
A
H
I
N
D
C
H
I
N
A
J
A
P
A
N
K
O
R
E
A
M
A
N
C
H
U
R
I
A
S
I
B
E
R
I
A
M
O
N
G
O
L
I
A
H
I
N
D
C
H
I
N
A
J
A
P
A
N
K
O
R
E
A
M
A
N
C
H
U
R
I
A

Midland Railway Co. of Western Australia Ltd.

The ordinary general meeting of the Midland Railway Co. of Western Australia Limited was held on May 17 at Winchester House, Old Broad Street, London, E.C.

Mr. W. Sandford Poole, Chairman of the company, presided.

The Secretary, Mr. John S. Lewis, having read the notice convening the meeting and the auditors' report.

The Chairman said that the gross traffic receipts for the year ended June 30, 1944, amounted to A£330,830, a decrease of A£62,124 as compared with those of the previous year. Working expenses, notwithstanding the reduction in traffic revenue, at the figure of A£154,226, were higher by A£4,685. The reduction in earnings was mainly attributable to the curtailment of defence movements, and to the smaller tonnage of wheat transported, which was 57.3 per cent. less than during the preceding year, the decline being due to compulsory reduction in wheat cropping acreage and fertiliser rationing under National Security Regulations. Deliveries of wheat were approximately 60 per cent. lower than the deliveries for an average pre-war season. The quantity of bulk wheat stored in country silos at June 30, 1944, awaiting transport to export terminals approximated 16,783 tons, equivalent to about 70 per cent. of the total bulk wheat receipts for the season. The increase in working expenses was mainly due to the augmentation of workshop staff, in the acceleration of locomotive and rolling stock maintenance, and the necessity for regular overtime work in maintenance of the permanent way. The advance in the price of coal and other commodities also added to operating costs. Wages were fixed by an Arbitration Court.

During the year under review, expenditure on Capital Account amounted to £28,083, over £25,000 of which represented the cost of the construction of new water catchments for locomotive water services. These catchment areas were necessary, as the supply of good water along the line had always been a matter of difficulty, the prevalence of salt corroding the locomotive boilers. It was hoped that the supply from these catchments would substantially improve conditions. The sum expended on renewals during the same period totalled A£72,545, and was mainly in respect of locomotives and rolling stock, rails, sleepers and fastenings, and renewals of station and other buildings. The cost of relaying 3 miles of track was also included in the above figures. It would be noticed that out of A£80,000 provided in the accounts for renewals, A£72,545 was expended during the year, and the balance of A£7,453 was added to the A£35,447 at the credit of deferred renewals account a year before, increasing the balance at the credit of that account to A£42,902. The only remaining item in the Australian revenue account to which he desired to refer was the allocation of A£3,000 to start a superannuation reserve account. Quite a number of their employees on the salaried staff had reached the age for retirement, but due to the shortage of man-power, because of war conditions, they had continued to carry on their duties. The Government was proposing to set up a national superannuation scheme, but because of the war, it had been held over. In those circumstances, the Board felt that a sum of A£3,000 should be set aside to a superannuation reserve account. It

would be observed that the balance of the London revenue account for the year, after charging expenses, interest on the debenture issues, loss on exchange, and provision for taxation, was £15,616. It was recommended that a dividend of 4 per cent., less income tax at 9s. 7d. in the £, be declared on the unified ordinary stock, in respect of the year ended June 30, 1944, payable forthwith. This would require £12,358, and the sum to be applied to redemption of reversionary certificates, if the foregoing recommendation was adopted, would be £2,471, leaving a balance of £787 of the year's profits to be added to the £46,400 brought forward from last year, making a total of £47,187 to be carried forward to next year's account. During the year 11,421 acres of land were sold, and 13,118 acres reverted to the company due to the rescission of two sales, leaving an area available for sale at June 30, 1944, of 670,295 acres. The position as to the disposal of land, to which he referred in his address to the company last year, remained unaltered, but he thought the time was approaching when they could look for some improvement in the demand for farm lands.

The company would be interested to learn that the Board had under consideration a proposal to instal a diesel car service on its line, with the object of providing a speedier service for passengers.

The General Manager, in his annual

report to the board of directors, stated that service rendered by the staff in all grades was, in the exceptional circumstances of the times, remarkably good. Before the close of this meeting, they would have the opportunity of supporting a vote of thanks to their local Director, Mr. H. B. Jackson, K.C., and their General Manager, Mr. D. W. Brisbane, who had looked after and administered the affairs of the company in Australia with judicious care, also to their staff in Australia for their good service. Since the annual report was issued, they had received advice that the gross traffic receipts for the month of March, 1945, were £17,935. This made the total gross traffic receipts for the 9 months ended March 31, 1945, £173,275, as against £270,532 for the corresponding period of the previous year.

It was a great relief to know that the war in Europe had been won, and they sincerely hoped that they and their Australian friends would soon experience a like feeling in regard to the war with Japan. The fact that the defence traffic over their line had been largely reduced could be looked upon as a sign that the time of imminent danger to Western Australia had passed. He took the opportunity of congratulating their kith and kin in Australia, and their brave young men, on their gallant defence of the country, and their fight in the adjacent islands, under conditions of exceptional difficulty.

The report and accounts were unanimously adopted.

Swansea and District Transport

In the course of his address to the shareholders at the annual meeting of the South Wales Transport Co. Ltd. on May 7, the Chairman, Mr. J. S. Wills, said that the undertakings which the company operated or controlled had now been serving the population of Swansea and its neighbourhood for 141 years. The Swansea & Mumbles Railway was incorporated by Statute in June, 1804, and became the first passenger railway in the world. Despite its age, it was one of the most modern railway systems in the world, having been converted to electrical operation, with completely new rolling stock, in 1929. The Swansea Improvements & Tramways Company was incorporated by Statute in 1874. Large payments of rates had been made to the Swansea Corporation and the company had been a good customer for electrical energy. The year 1944 had seen by far the largest payment made during the 141 years to which he had referred. Last year he had spoken of an item which appeared in the accounts for the first time, namely, a payment to the Swansea Corporation in pursuance of the Swansea & District Transport Act, 1936. This payment, in respect of 1944, amounted to £29,996, an increase over that paid in 1943 of £5,565. The specified profits out of which the amount of £29,996 had been paid were earned in spite of serious difficulties caused by acute shortage of labour and of almost every commodity required for the operation of public service vehicles. Because of the restrictions imposed by war conditions, it was possible last year to operate only two-thirds of the vehicle miles run in the year before the war; nevertheless, the number of passengers carried increased by 18 per cent. It would be realised that it was very largely because of this vehicle overcrowd-

ing that the payment to the Corporation had been so high and that it must be expected to be reduced when it became possible to restore to passengers the travelling facilities to which they were accustomed previously.

The company had been called upon to provide numerous journeys for military personnel, and preparations for "D" Day put further pressure on the company's resources. The Chairman of the Great Western Railway had told his shareholders that 158 vessels had to be loaded and made ready to sail on the appointed day from the G.W.R. South Wales ports. It would be found that the larger part of these were loaded at Swansea and that the South Wales company's vehicles carried the bulk of the labour for the job to and from their work. The Ministry of Labour & National Service called upon the company to mobilise its resources to provide transport for workmen to be employed on what was termed a No. 1 Priority Job, and which proved to be the construction at Swansea of prefabricated ports, or Mulberry docks, which were such an important factor in the initial landings of the Allies on the Normandy coast. More than 1,000 men were transported day and night between their homes and the site.

SOUTH AFRICAN RAILWAYS & HARBOURS.—The results of working of the railways, harbours, steamships and airways of the South African Railways & Harbours Administration for the month of February last were: revenue, £4,929,520; and expenditure, £4,983,131 (deficit, £53,611). For the period April, 1944, to February, 1945, revenue was £52,992,439, and expenditure was £52,852,556 (surplus £139,883).

Questions in Parliament

Re-Opening of London Tube Railway

Sir George Jones (Stoke Newington—C.) on May 9 asked the Parliamentary Secretary, Ministry of War Transport, when the tube railway between Kingsway and Aldwych would be re-opened for the running of trains.

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport) stated in a written answer: This section of the tube railway was closed to enable it to be used as an air-raid shelter and for other essential war purposes. I am not yet able to state how long it will be before the necessary arrangements can be made for resumption of services on the section.

London Transport Services Strike

Mr. H. Brooke (Lewisham West—C.) on May 15 asked the Minister of Labour whether he was aware of the extra suffering caused to Londoners by the recent strike affecting London transport services; what were the precise grounds for the strike; and whether he could make a statement.

Mr. M. S. McCorquodale (Joint Parliamentary Secretary, Ministry of Labour) in a written answer stated: The London transport services have been working under a heavy strain and my department together with the Ministry of War Transport, and the London Passenger Transport Board have been taking special steps to augment the labour force. I very much regret that despite the knowledge that these efforts were being made in full co-operation with the union, a certain section of the workers decided to stop work as a protest against the introduction of the summer schedules. I have every hope that the measures that have been and are being taken to maintain reasonable conditions of working will be successful.

Transport of German Prisoners

Mr. T. E. N. Driberg (Maldon—Ind.) on May 8 asked the Secretary of State for War if he was aware that all the first class accommodation on the Kendal section of the 10.25 a.m. train from Euston on May 1 had been reserved, by instruction from the War Office, for German prisoners of war, who travelled three on each side of each compartment, with the result that ordinary passengers, including several travelling on important national business and at least one recovering from a major operation, were incommoded; and why it was considered necessary that German prisoners, of whatever rank, should travel first class.

Sir James Grigg (Secretary of State for War) in a written answer stated: All prisoners are segregated from other passengers and general officers normally travel first class. This meant in this case that some passengers had to be found seats elsewhere in the train. I regret the inconvenience to which they were put.

Transport Advisory Council

Mr. D. L. Lipson (Cheltenham—Ind.) on May 10 asked the Parliamentary Secretary, Ministry of War Transport, what was the reason for the delay in appointing the members of the Transport Advisory Council to replace those whose term of office expired in January, 1943; and would he take immediate steps to make appointments and so enable this statutory body to do its work.

Mr. Noel-Baker stated in a written answer: The time is now coming when the Transport Advisory Council will be able to resume its functions and some time ago the Minister of War Transport took the preliminary steps towards its reconstitution. In the conditions of wartime there has been some difficulty in securing a fully represen-

tative body but I hope to be able to announce the re-appointment of the Council in the course of a few weeks.

Contract Tickets

Captain W. R. S. Prescott (Darwen—C.) on May 10 asked the Parliamentary Secretary, Ministry of War Transport whether he was aware that, as a result of regulations introduced by the North-west Regional Transport Commissioner service personnel who previously had contracts on public conveyances could not on discharge obtain their renewal; and if he would remedy this.

Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport) stated in a written answer: Yes Sir. I have asked the Regional Transport Commissioner to arrange that on bus routes where contract tickets still are issued but only to those who held contracts on a specified date during the war and have continued their contracts since that date, special exception should be made to enable discharged service personnel to renew con-

tracts held immediately before their entry into the forces if they so desire.

Bootle Explosion Compensation

Mr. Frank Anderson (Whitehaven—Lab.) on May 9 asked the Parliamentary Secretary, Ministry of War Transport, if, arising out of the explosion at Bootle, Cumberland, on March 22, 1945, he could now state who was responsible for the payment of damage to property, etc.

Mr. Noel-Baker: I am authorised by the First Lord of the Admiralty to state that the explosives in question were being transported at Admiralty risk, and that the Admiralty will be responsible, within the limits of that department's legal liability, for the payment of any proper claims for damage arising from the conveyance of these explosives.

Mr. Anderson: Does that reply deal with the damage to property generally or railway company's property only?

Mr. Noel-Baker: I realise that; and I think I ought not to try to add to the very carefully prepared answer I have given.

L.M.S.R. Wartime Expenditure

A statement issued by the L.M.S.R. last week recorded that during the war the L.M.S.R. has been driven at full speed with the minimum of attention to maintenance and repairs. Nevertheless, to deal with the greatly increased traffics, the company has had to incur considerable expenditure out of its own funds. Figures have just been released giving details of expenditure by the company on permanent way and works and on rolling stock during the years 1940 to 1944. The total of £94,413,000 is made up as follows:—

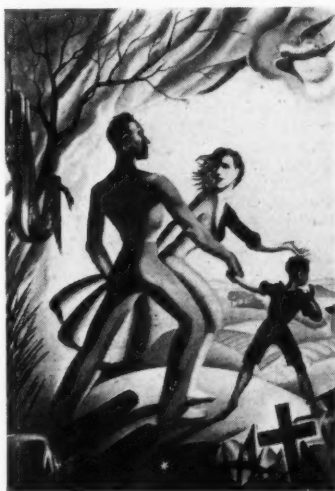
Year	P. way and works £ (000's)	Loco- motives £ (000's)	Carriages £ (000's)	Wagons £ (000's)	Total £ (000's)
1940 ...	6,457	4,429	1,778	1,575	14,239
1941 ...	6,616	4,519	1,548	1,870	14,553
1942 ...	7,777	6,160	1,228	3,275	18,440
1943 ...	8,867	8,231	1,540	3,638	22,276
1944 ...	10,016	9,039	1,904	3,946	24,905
Total ...	39,733	32,378	7,998	14,304	94,413

The expenditure of £39,733,000 on re-

newals and repairs to the permanent way and to works, involved the complete renewal of 1,679 miles of track and the use of 1,908,864 yd. of ballast, 286,249 tons of rails and 4,711,889 sleepers.

Of the 564 new locomotives built, 293 were built in the L.M.S.R. workshops, and 271 by other railway companies or by contractors, and 28,373 locomotives were repaired in the works of the company. The expenditure of £14,304,000 on wagons includes the construction of 17,428 wagons—16,635 in L.M.S.R. works and 793 by contractors—and the repair of 2,859,659. A large number of wagon repairs were carried out by volunteers working at week-ends. In 1944, for instance, volunteers completed repairs to no fewer than 131,749 wagons. During the war very few new passenger carriages have been built. Most of the total of 513 for the five years were completed during the first two years of the war. The number of carriages repaired was 50,963. During this period the value of munitions production carried out in L.M.S.R. workshops totalled over £20 millions. Although all this essential work has been carried out by the company for war purposes, there is a substantial lag in other directions as priority had to be given to track, locomotives, and wagons.

L.P.T.B. VE Poster



Poster displayed at London Transport Underground stations to mark the end of the European war

CENTRIFUGALLY-CAST (SPUN) IRON PIPES.

—A recently-published British Standard specification (B.S. 1211—1945) covers cast-iron straight pipes with spigot and socket or turned and bored joints which are manufactured by the centrifugal process in either metal moulds or sand moulds. It corresponds generally to B.S. 78—1938, which covers vertical cast pipes. Three classes of pipe are specified, as follows:—Class B: test pressure 400 ft. head of water; class C: test pressure 600 ft. head of water and class D: test pressure 800 ft. head of water. The specification prescribes standard lengths, internal diameters and weights of pipes, together with details of hydraulic tests and tests for straightness. The standard protective covering for finished pipes also is specified. Copies of the specification may be obtained from the British Standards Institution, Publications Department, 28, Victoria Street, London, S.W.1, price 2s. each, post free.

Notes and News

Further Swedish Nationalisation.—From July 1 next, the Stockholm-Västerås-Bergslagen Railway will be incorporated in the Swedish State Railways. This important private railway system comprises 298 route miles of standard-gauge line, operated by 65 steam locomotives, 140 carriages, and 1,612 wagons.

Johnson & Phillips Limited.—The net profit of Johnson & Phillips Limited, for the year ended December 31, 1944, after provision for taxation, was £243,340 (£191,242). The final dividend on the share capital was at the rate of $7\frac{1}{2}$ per cent., making 15 per cent. (same) for the year. The amount carried forward was £108,340 (£93,015).

Acquisition of Dorada Railway.—The extraordinary session of the Colombian Congress closed in Bogota on February 16 after passing legislation which authorised the Government to acquire the British-owned Dorada Railway. Proceedings have not yet been begun towards the establishment of a valuation of this railway, one of the two remaining foreign-owned lines still operating in Colombia.

Mersey Tunnel Order.—Under the Special Enactments (Extension of Time) Act, 1940, the Minister of War Transport has made an Order extending for a period of two years the time limited by Section 22 of the Mersey Tunnel Act, 1933, and the Mersey Tunnel (Extension of Time) Order, 1942, for the promotion of a Bill in Parliament for the revision, by such Bill, of Sections 8, 9, and 10 of the Act of 1933.

British Oxygen Co. Ltd.—The net profit of the British Oxygen Co. Ltd. for the year ended December 31, 1944, after provision for taxation, amounted to £370,369 (£384,527). The amount brought forward was £87,471. The final dividend on the ordinary stock was at the rate of 8 per cent. (same), making 16 per cent. (15 per cent.) for the year. The amount placed to general reserve was £150,000 (£100,000), leaving £86,874 carried forward.

British Electric Traction Co. Ltd.—Revenue of the British Electric Traction Co. Ltd. for the year ended March 31, 1945, was £779,608 (£767,962). The net income, after deducting expenses and provision for taxation, was £323,737 (£316,441). The final dividend on the deferred ordinary stock was at the rate of 30 per cent., making 45 per cent. for the year (same). The amount transferred to the undivided profit account was £62,110 (£56,961).

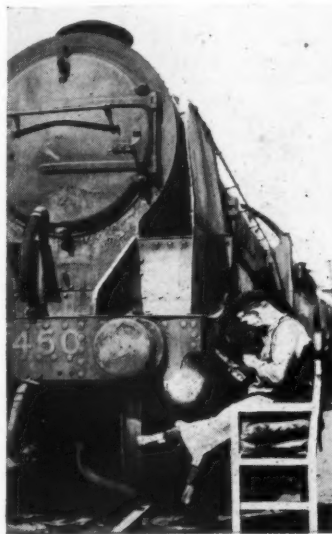
Electrification in Switzerland.—Among Swiss railway lines in process of conversion to electric traction, one of the most important is that of the Federal Railways from Schaffhausen, through Kreuzlingen, to Romanshorn (some 40 miles long). It is not known when the electrification of this standard-gauge line will be completed; but it is expected that the section between Schaffhausen and Etzwilen (about 10 miles) will have been converted by May, 1946.

Passenger Movement in Rio de Janeiro.—A total of 1,270,041,254 passengers, corresponding to a daily movement of 3,479,565, was registered as having been conveyed in Rio de Janeiro and suburbs during 1943. Trams carried 703,161,020 persons, against 606,066,859 in 1941. Tram routes in the Rio de Janeiro area represented 469 km. and were served by 1,147 vehicles. Buses made 4,696,002 journeys in 1943, and carried 137,050,044 passengers, compared with 117,226,527 in 1941, and

with 126,225,430 in 1942. The suburban trains of the Central and Leopoldina Railways conveyed 120,970,000 passengers in 1943, against 101,080,717 in 1941.

Right-Hand Drive in Paraguay.—The left-hand rule of the road was changed to right hand for all traffic in Paraguay on February 25. The Bureau of Traffic of the Municipality of Asuncion and the authorities of the cities and towns in the interior, as well as the police corps throughout the country, were instructed to take measures necessary to put the new ruling into practice simultaneously throughout the nation. The traffic change was made without major difficulties.

Employment for War Wounded Railway Men.—The railways are making preparations to welcome back those members of their staffs now serving with the Forces. One of the most important aspects of the scheme is the effort that is being made for the resettlement of war wounded and disabled employees. No matter how serious the disability, employment is being arranged on the highest possible level as indicated by some typical cases on the Southern Railway. In one of these personal triumphs over adversity a former iron foundry employee who lost both legs while serving with the Royal Armoured Corps in France returned



to Eastleigh for training as a welder. Provided with a wheeled chair in which to get about, and a special chair for his work, the employee, F. J. Clarke, is now engaged on the welding of locomotive parts, as shown in the accompanying illustration. In another instance a locomotive fireman, R. Cloke, blinded in an air raid, is doing a useful job as a telephone operator. Another telephone operator is E. Page, formerly a waiter at the Charing Cross Hotel, who lost his right arm in North Africa.

Yorkshire Woollen District Transport Co. Ltd.—Speaking recently at the forty-third ordinary general meeting of the Yorkshire Woollen District Transport Co. Ltd., Mr. W. T. James, O.B.E., the Chairman, said that they looked forward to an early removal of the restrictions placed by the Government in the early part of the war upon what were regarded as their less essential services—to the full restoration of their express services, coach tours and excursions. Relations with the L.N.E.R. and the L.M.S.R., each of which

had been represented on their board of directors since 1930, were particularly happy.

Grand Union Canal Company.—An extraordinary general meeting of the Grand Union Canal Company will be held at Winchester House, Old Broad Street, London, on May 28 at 11.30 a.m. to consider the following resolutions: for approval of the redemption by the Grand Union Canal Company Co. Ltd. of its outstanding 6 per

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices	
			May 22, 1945	Rise/ Fall
G.W.R.				
Cons. Ord. ...	62½	55	54½	— ½
5% Con. Pref. ...	122½	114½	120½	— 1
5% Red. Pref. (1950) ...	110½	104	105	—
5% Rt. Charge ...	135½	128	136½	—
5% Cons. Guar. ...	134½	125	133½	—
4% Deb. ...	118½	112½	117	—
4½% Deb. ...	118½	114	118½	—
4½% Deb. ...	124½	119½	123½	+ 1
5% Deb. ...	137	129½	136½	—
2½% Deb. ...	77	73½	76½	—
L.M.S.R.				
Ord. ...	34½	27½	27	— ½
4% Pref. (1923) ...	64½	55½	54	— 1½
4% Pref. ...	81	72½	77	— 1
5% Red. Pref. (1955) ...	105½	102	105½	—
4% Guar. ...	107½	99½	103	— ½
4% Deb. ...	111½	104	109½	—
5% Red. Deb. (1952) ...	111	108	108½	—
L.N.E.R.				
5% Pref. Ord. ...	10½	7½	6½	— ½
Def. Ord. ...	5½	3½	3½	—
4% First Pref. ...	68½	55½	54	— 1
4% Second Pref. ...	35½	28½	27	— ½
5% Red. Pref. (1955) ...	102½	97½	102	— ½
4% First Guar. ...	105½	96½	102	— ½
4% Second Guar. ...	95½	88½	96	—
3% Deb. ...	88½	80½	87½	—
4% Deb. ...	110½	103½	109	—
5% Red. Deb. (1947) ...	105½	101½	101½	—
4½% Sinking Fund Red. Deb. ...	107	104½	105½	—
SOUTHERN				
Pref. Ord. ...	80½	71½	73	— 1
Def. Ord. ...	26½	23	23½	— ½
5% Pref. ...	122	113½	120½	—
5% Red. Pref. (1964) ...	117½	112½	115½	—
5% Guar. Pref. ...	134	125½	133½	— 1
5% Red. Guar. Pref. (1957) ...	115½	112½	115½	—
4% Deb. ...	118	110	116	—
5% Deb. ...	135½	127	135	—
4% Red. Deb. (1962- 67) ...	111½	107½	110½	—
4% Red. Deb. (1970- 80) ...	112	108½	112½	—
FORTH BRIDGE				
4% Deb. ...	107	103	105	—
4% Guar. ...	106½	102	105	—
L.P.T.B.				
4½% "A" ...	125	119	123½	—
5% "A" ...	133½	128	133½	—
3% Guar. (1967-72) ...	99½	98	99	—
5% "B" ...	124½	118½	123½	—
"C" ...	72½	64½	67½	+ 1
MERSEY				
Ord. ...	35½	33	36½	—
3% Perp. Pref. ...	72	66	71	—
4% Perp. Deb. ...	105	103	106	—
3% Perp. Deb. ...	85½	79½	84	—
IRELAND* BELFAST & C.D.				
Ord. ...	9	6	6½	—
G. NORTHERN				
Ord. ...	33½	19	27½	— ½
Pref. ...	49	37	46½	+ 2½
Guar. ...	70	57½	71½	— ½
Deb. ...	90½	81½	90½	— ½
IRISH TRANSPORT				
Common ...	—	—	71	— ½
3% Deb. ...	—	—	99½	+ ½

* Latest available quotation

OFFICIAL NOTICES

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

WANTED Position Transport Manager with reputable firm. Now employed Ministry of Supply as Transport Officer for past 5 years. Vast road and rail experience, extensive knowledge rail rates. Age 44 years, energetic, highest testimonials. Box 255, c/o *The Railway Gazette*.

Universal Directory of Railway Officials and Railway Year Book

50th Annual Edition, 1944-45

Price 20/- net.

THE DIRECTORY PUBLISHING CO., LTD.,
33, Tothill Street, Westminster, S.W.1

cent. mortgage debenture stock; that £183,599 be raised by the issue of debenture stock for that amount; that the new stock shall rank with the existing stocks and carry interest at 3½ per cent. per annum; that the directors be authorised to subscribe at par for 177,000 additional ordinary £1 shares of the Grand Union Canal Carrying Co. Ltd.; also to issue to that company at par the above £183,599 debenture stock.

Colvilles Limited.—The trading profit of Colvilles Limited, for the year ended December 31, 1944, after providing for taxation, war damage insurance and contingencies was £537,199 (£538,969). The aggregate profits of subsidiaries was £258,620 (£327,187). The total net income was £631,411 (£648,407). The final ordinary dividend was at the rate of 5 per cent. making 8 per cent. (same), less tax, for the year. The amount carried forward was £320,217 (£252,088).

Signal Fitters and Look-Out Protection.—The Court of Appeal on May 2 allowed an appeal, with costs, in favour of Mrs. Berriman, widow of a Hull railwayman. Mr. Berriman and another man were killed on December 27, 1943, by a train near Paragon Station, Hull, while oiling and cleaning connecting rods actuating points. Mr. Justice Stable had dismissed Mrs. Berriman's claim against the L.N.E.R. on the ground that the men were signal fitters and not permanent way men, and that therefore the company was not guilty

of a breach of a statutory rule or of negligence in not providing a look-out man. The Court of Appeal took the view that the rule did not refer to any particular class of workman but to those working in a place called the permanent way. Judgment was accordingly entered for Mrs. Berriman for £1,500 agreed damages. Leave to appeal to the House of Lords was granted to the company, which undertook to pay £200 to Mrs. Berriman in any event.

L.M.S.R. VICTORY MESSAGE

Lord Royden, Chairman, and Sir William Wood, President of the L.M.S.R. have jointly sent a message to all L.M.S.R. staff, both at home and in the services. The message reads:—

"The complete surrender of Germany has brought to a glorious conclusion the resistance of the Allied Nations to the attempts to bring under Nazi Fascist domination our liberty-loving country.

"To that great effort and in the preparation for it the whole L.M.S.R. organisation has played a really great part during the past six years. Alike in the movement of traffic on the line, at stations and offices, in the workshops, on the permanent way, in the special tasks of the steamship fleet, in the Home Guard, in resisting air attacks and overcoming their effects, and above all in direct service in the Armed Forces, we have every reason to be proud of the National Services of the L.M.S.R. staff.

"All difficulties have been successfully overcome; and every demand made upon us by the Government, whether for transport purposes or for the many direct War purposes, has been met in full.

"To you all, at home and overseas, we send you the thanks and best wishes of the Board and Executive of the company."

The Esher Accident.—The Ministry of War Transport Inspecting Officer's report on the Southern Railway train accident at Esher on January 28 was issued on May 22. Details as to the findings of the inquiry will be published in a later issue.

Stewarts and Lloyds Limited.—The trading profit, including subsidiary dividends and after provision for taxation, of Stewarts and Lloyds Limited for the year ended December 31, 1944, was £1,989,836 (£1,599,075). For 1944, there was no credit for taxation reserve no longer required (£200,000). The amount placed to reserve for obsolescence was £500,000 (£100,000). Nothing was allocated for 1944 to contingencies reserve (£250,000). The dividend on the deferred stock for the year was at the rate of 12½ per cent. (same). The amount carried forward was £254,299 (£190,460).

Train in Colliery Subsidence.—A verdict of death by misadventure was returned at an inquest held recently at Wigan on the death of L. Berry, driver of the engine which, with 13 laden coal wagons, disappeared down an old pit shaft, as the result of a subsidence. An illustration of the line after the subsidence was reproduced on page 492 of our May 18 issue. After the accident the engine, which had been pushing the wagons, could be seen about 40 yd. from the top of the shaft, which is some 400 yd. deep.

The Travel Luncheon Club.—The Travel Luncheon Club, which has been maintaining its contacts during the war years by various functions, held a European Victory Lunch in the Orchard Room of the Dorchester Hotel, London, on Thursday, May 17. Mr. Shirley James presided over a large attendance. In addition to the Loyal Toast there were two toasts, that of "The Fighting Services," proposed by Sir William Brown, K.C.B., K.C.M.G., C.B.E., to which Air Marshal Sir Richard Peck, K.C.B., O.B.E., replied. The toast of "The Visitors" was proposed by Mr. Roderick Waugh, and the response was made by Sir Douglas Hacking, Bt., M.P., whose services in the development of travel Mr. Shirley James emphasised, and Mr. George Allison.

There was a full attendance of members and the guests included:—

Sir William Brown, K.C.M.G., K.C.B., C.B.E.; Sir Alexander Maxwell (Tobacco Controller); Sir Bracewell Smith, M.P.; Air Marshal Sir Richard Peck, K.C.B.; Air Vice-Marshal W. B. Cushion; Air Vice-Marshal D. C. T. Bennett, M.P.; Captain V. Hammersley-Heenan, R.N.; Wing Commander Boutcher; Mr. J. H. Todd; Lt.-Colonel Klein (Netherlands Army); Lt.-Commander Owen Smyth (U.S. Navy); Colonel Stephen (U.S. Army); Count Lewenhaupt; Colonel S. C. Morphet, C.M.G., D.S.O.

Forthcoming Meetings

June 1 (Fri.).—The Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1. 5.30 p.m. "An Exhibition of Films of Engineering Interest."

VE Day at G.W.R. Royal Hotel, Paddington



The facade of the Royal Hotel, Paddington, showing the display of flags of the United Nations on VE Day

Railway Stock Market

General Election developments maintained subdued and inactive conditions in stock markets, although British Funds were steady and movements in industrial shares generally did not exceed more than a few pence. Speculative interest tended to centre on gold mining shares and Far East securities. There has been very little selling, but not unnaturally buyers are adopting a waiting attitude on the assumption that, if the General Election takes place early in July, it will not be long before the attitude of Government to industry, and questions of control, taxation relief, and similar matters can be more clearly defined.

Home rails have eased further because of inactive market conditions; the large yields and the reasonable prospects of dividends being maintained during the next two years, again failed to attract buyers. The increased attitude of caution as to home railway stocks is understandable, because rightly or wrongly, the belief in the City is that there is perhaps no industry whose future will turn so completely on the result of the General Election as that of the main-line railways. The assumption is that a Conservative victory would mean the return of the railways to private ownership after the termination of the control agreement. In a recent speech Colonel E. Gore Browne, the Chairman, pointed out that the Southern Railway is prepared to meet competition from other forms of transport, provided the railways are given the right to compete on fair and equal terms, and are relieved of some of the obligations

imposed 100 years ago. Incidentally, a point sometimes overlooked is that the railways could have had a much better dividend record in pre-war years had a large proportion of revenue not been used in renewals, repairs, etc., thus securing long-term efficiency. The war has demonstrated that, thanks to this long-sighted policy, the railways were in a position to deal with a much larger volume of traffic than was available in peacetime. If there is to be a General Election in July, the prevailing view is that for the time being stock markets seem likely to remain subdued and inactive; but that in the event of a Conservative victory, values probably would go ahead, particularly railway stocks and the shares of companies identified with industries whose prospects are bound up with the attitude of Government to industry and the relaxing and abolition of controls.

As compared with a week ago, Great Western further receded from 55 to 54½, and is now below the lowest level recorded last year. Similar remarks apply to L.M.S.R. and also to L.N.E.R. second preference; but Southern deferred at 23½ is fractionally above the lowest touched in 1944. In fact, Southern deferred continued to attract a little buying; and London Transport "C" has remained in favour at improved prices on the view that in this case higher dividends may be forthcoming after the end of the control agreement. A few prior changes and senior preference stocks were again slightly lower on balance: Great Western 5 per cent. preference was maintained at 120½,

but the guaranteed stock was ½ down at 133; and the 4 per cent. debentures were maintained at 117. L.M.S.R. eased to 27½, the 1923 preference lost a point at 54½, and the senior preference ½ at 77½. L.N.E.R. second preference was 27½ (the same as L.M.S.R. ordinary) compared with 27½, the first preference 54½, compared with 55; but the first and second guaranteed remained at 102½ and 96 respectively. Among Southern stocks, the deferred was maintained at 23½; the preferred reacted further from 74 to 73½, but the 5 per cent. preference 120½ and the 4 per cent. debentures 116 were the same as a week ago. London Transport "C" was a point higher at 67½.

Argentine rails continued to show fractional declines, support being lacking. Among Buenos Ayres Great Southern stocks the ordinary at 11 was maintained, but the 5 per cent. preference receded ½ to 26½, and the 6 per cent. preference from 18½ to 17½; but the 4 per cent. debentures kept at 63½. Buenos Ayres & Pacific consolidated debentures declined from 57 to 55½. Buenos Ayres Western 4 per cent. debentures at 56 and Central Argentine 4 per cent. debentures at 56½. Central Uruguay stocks, however, were better on the appointment of a commission to study the company's suggestion. Mexican railway stocks again responded to reports of a forthcoming offer for the railway; the 6 per cent. debentures have risen to 55. Elsewhere, United of Havana 1906 debentures further declined to 22½. Canadian Pacifics were 16½.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ended	Traffic for week		No. of Weeks	Aggregate traffic to date			Shares or Stock	Prices						
			Total this year	Inc. or dec. compared with 1943/4		Totals		Increase or decrease		Highest 1944	Lowest 1944	May 22, 1945	Yield % (Note)			
						1944/5	1943/4									
South & Central America	Antofagasta (Chili) & Bolivia	834	13.5.45	£ 26,820	+	£ 470	19	571,230	531,960	+	£ 39,270	Ord. Sk.	13½	9½	10½	Nil
	Argentine North Eastern ...	753	12.5.45	17,825	-	644	45	834,025	694,169	+	139,856	6 p.c. Deb.	18½	7½	8½	Nil
	Bolivar ...	174	Apr., 1945	4,897	-	209	16	20,965	21,059	-	94	Bonds	19½	15	22	Nil
	Brazil ...	...	...	...	...	...	...	...	...	...	...	Ord. Sk.	7½	3½	5½	Nil
	Buenos Ayres & Pacific	2,773	12.5.45	145,000	+	10,938	45	6,189,000	5,140,375	+	1,048,625	Ord. Sk.	14½	9½	10½	Nil
	Buenos Ayres Great Southern	5,080	12.5.45	183,312	+	27,250	45	9,447,375	8,467,688	+	979,687	Ord. Sk.	14½	9½	10½	Nil
	Buenos Ayres Western	1,924	12.5.45	63,062	+	500	45	3,172,875	2,685,188	+	487,687	"	13½	9½	10½	Nil
	Central Argentine ...	3,700	12.5.45	172,465	-	6,441	45	8,130,931	7,282,200	+	848,731	"	10½	6½	7½	Nil
	Do.	...	...	...	...	...	...	...	...	...	Dfd.	4½	3	4½	Nil	
	Cent. Uruguay of M. Video	972	5.5.45	34,650	+	2,562	44	1,519,984	1,520,781	-	797	Ord. Sk.	5½	4	5½	Nil
	Costa Rica ...	262	Mar., 1945	30,802	+	6,701	38	203,304	199,765	+	3,539	Ord. Sk.	17½	14½	16	Nil
	Dorada ...	70	Apr., 1945	30,890	+	6,832	17	113,595	97,339	+	16,256	1 Mt. Deb.	101	101	102½	£5 17/1
	Entre Rios ...	808	12.5.45	27,562	+	6,806	45	1,117,031	932,412	+	184,619	Ord. Sk.	6½	4½	5½	Nil
	Great Western of Brazil	1,030	12.5.45	18,200	-	19	19	500,800	436,300	+	64,500	Ord. Sh.	38/-	23/3	27/6	Nil
	International of Cl. Amer.	794	Mar., 1945	\$192,246	-	\$82,950	12	\$577,793	\$757,635	-	\$179,842	"	...	...	...	...
	Interoceanic of Mexico	...	...	...	...	...	...	...	...	...	...	1st Pref.	1½	1½	1½	Nil
	La Guaira & Caracas...	22½	Apr., 1945	6,506	-	984	16	22,416	29,446	-	7,030	5 p.c. Deb.	88	79	78½	£6 7/5
	Leopoldina ...	1,918	12.5.45	44,688	+	2,471	19	852,097	854,954	-	2,857	Ord. Sk.	5½	4½	4	Nil
	Mexican ...	483	14.5.45	ps. 525,100	+	ps. 94,700	20	ps. 11,457,000	ps. 8,002,300	+	ps. 3,454,700	Ord. Sk.	4	4	2½	Nil
	Midland Uruguay	319	Mar., 1945	16,993	+	1,573	38	155,974	155,768	+	206	Ord. Sh.	75/10	65/10	71/3	£3 10/2
	Nitrato ...	382	15.5.45	9,343	+	3,918	19	68,100	75,540	+	7,440	Pr. Li. Sk.	79½	68	78½	£7 12/10
	Paraguay Central ...	274	11.5.45	£67,455	+	£9,412	45	£2,701,065	£2,343,451	+	£357,614	Pref.	7½	5½	6½	Nil
	Peruvian Corporation	1,059	Apr., 1945	126,043	+	4,934	43	1,296,522	1,085,795	+	210,727	Ord. Sk.	21/3	13/9	12/6	£3 14/9
	Salvador ...	100	Feb., 1945	206,000	+	18,000	34	c 957,000	c 984,000	-	c 27,000	Ord. Sk.	57½	46	53½	£3 14/9
	San Paulo ...	153½	...	2,910	-	1,735	42	26,280	54,660	-	28,380	Ord. Sh.	21/3	13/9	12/6	Nil
	Taitai ...	...	Apr., 1945	51,284	-	21,607	45	2,456,816	2,642,728	-	185,912	Ord. Sk.	4	2½	2½	Nil
	United of Havana	1,301	12.5.45	1,856	+	106	38	14,313	13,265	+	1,048	...	...	...	...	...
	Uruguay Northern ...	73	Mar., 1945	...	...	...	...	...	...	...	...	...	...	...	...	...
Canada	Canadian Pacific	17,028	14.5.45	1,115,000	-	114,200	18	22,320,400	22,504,000	-	183,600	Ord. Sk.	17½	13½	16	£6 8/9
India	Barsi Light	202	Apr., 1945	31,072	+	2,640	4	31,072	28,432	+	2,640	Ord. Sk.	129½	97½	129½	£3 9/6
Various	Egyptian Delta	607	20.4.45	17,939	-	1,043	3	36,015	39,129	-	3,114	Pr. Sh.	7½	5½	6½	Nil
	Manila	...	...	...	...	...	...	...	...	...	B. Deb.	63½	58	60	Nil	
	Midland of W. Australia	277	Mar., 1945	17,935	+	7,095	39	173,275	270,532	-	97,257	Inc. Deb.	101½	99½	96½	£4 2/11
	Nigeria	1,900	24.2.45	386,036	+	10,636	17	...	...	...	...	...	...	...	...	...
	South Africa	13,301	7.4.45	959,909	+	64,617	1	959,909	895,192	+	64,717	...	...	...	...	...
	Victoria	4,774	Nov., 1944	1,307,642	-	35,856	...	...	...	...	...	...	...	...	...	...

Note. Yields are based on the approximate current price and are within a fraction of ½. Argentine traffics are given in sterling calculated @ 16 pesos to the £
 † Receipts are calculated @ 1s. 6d. to the rupee